ADDITIONAL

PIONEER

Service Manual

ORDER NO.
ARP1104-0

STEREO RECEIVER

SX-1500(BK) S, HEZ
SX-1500A(BK) YP

- For servicing these types, please refer to the SX-1500(BK)/KU type servise manual (ARP1010) with the exception of this additional service manual.

- This additional service manual is applicable to the SX-1500(BK)/S, HEZ and SX-1500A(BK)/YP types.
- SX-1500A(BK) is provided with all the features SX-1500(BK) has, with the added feature of AM stereo demodulation function.

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1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The SX-1500(BK)/S, HEZ and SX-1500A[BK]/YP types are the same as the SX-1500(BK)/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		SX-1500(BK) KU type	SX-1500(BK) S type	SX-1500(BK) HEZ type	SX-1500A(BK) YP type	
	Complex assembly	GWM-496	GWM-500	GWM-501	GWM-500	
	LINE FILTER assembly	.....	.....	AWT1003	.....	
	AM MPX assembly	.....	.....	.....	AWD1001	
	HEAD PHONE assembly	Non supply	Non supply	Non supply	Non supply	
	SP TERMINAL assembly	Non supply	Non supply	Non supply	Non supply	
⚠	C901 Capacitor					
	(0.01μF/AC250V)	ACG-001	.....	.....	.....	
	(0.1μF/AC250V)	.....	ACE-507	ACE-507	ACE-507	
⚠	C902 Capacitor					
	(0.01μF/AC400V)	.....	ACG-502	ACG-502	ACG-502	
⚠	Power cord	ADG-088	ADG-073	ADG-097	ADG-064	
⚠ ★★	FU601 Fuse (2.5A)	AEK-123	.....	.....	.....	
⚠ ★★	FU601,FU602 Fuse (1.25A)	.....	AEK-120	.....	.....	
⚠ ★★	FU603,FU604 Fuse (2.5A)	.....	AEK-123	.....	.....	
⚠ ★★	FU601 Fuse (T1.25A)	.....	.....	AEK-018	AEK-018	
⚠ ★★	FU602~FU604 Fuse (T2.5A)	.....	.....	AEK-403	AEK-403	
⚠ ★★	S2 Line voltage selector	.....	AKX-507	.....	.....	
⚠ ★	T901 Power transformer					
	(120V)	ATS-285	.....	.....	.....	
	(110V/120V/220V/240V)	.....	ATS1030	.....	.....	
	(220V/240V)	.....	.....	ATS1024	ATS1024	
	Operating instructions					
	(English)	ARB-719	ARB-719	.....	ARB-719	
	(German)	.....	.....	ARC1023	.....	
	(Sub)	.....	.....	.....	ARH1022	
★★	S3 Slide switch	.....	ASH-016	.....	.....	
	C903 Ceramic capacitor	.....	CKDYF473Z50	.....	.....	
	C903– C906 Ceramic capacitor	.....	.....	CKDYB391K50	.....	
	FM antenna assembly	.....	.....	ADH1002	.....	
	AC cord stopper	.....	.....	AEC-882		
⚠	AC Socket (AC OUTLET)	AKP-507	AKP-507	AKP-508	AKP-517	
⚠	PAL Socket	.....	.....	AKX1003	.....	
	Packing case	AHE-690	AHE-690	AHE-690	AHD1115	
	Screw	.....	.....	ABA-115	.....	
	Screw	.....	.....	.....	ABA-176	
	Screw	.....	BMZ30P050FZB	.....	.....	
	Nut (M12)	.....	.....	NKX2FNI	.....	
	Bonnet case	ANE-623	ANE-623	ANE1045	ANE1033	
	Sheet panel	ANZ-332	ANZ-332	ANZ-332	AAK1131	
	Front panel	ANY-189	ANY-189	ANY-189	AMB1097	

2. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
  560Ω 56 × 10^1 561 ...... RD¼PS 561 J
  47kΩ 47 × 10^3 473 ..... RD¼PS 473 J
  0.5Ω 0R5 .... RN2H 0R5 K
  1Ω 010 .... RS1P 010 K
  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
  5.62kΩ 562 × 10^1 5621 .... RN¼SR 5621 F
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

FOR SX-1500(BK)/S TYPE

Complex Assembly (GWM-500)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101 AM/FM IC	LA1265S
★★	IC301 OP-AMP IC	NJM4558DXC
★★	IC701 U-COM IC	PD2017
⚠ ★★	IC501 AUDIO-IC	STK4171-2S
★★	IC201 FM MAX IC	TA7343AP
★★	IC702 PLL IC	TC9172P
★★	IC601 REGURATOR IC	μPC78M12H
★★	Q704,Q706–Q708, Q721	DTA124ES (RN2203)
★★	Q709, Q714	DTA143ES (RN2201)
★★	Q701, Q705, Q710, Q713 Q717, Q720	DTC124ES (RN1203)
★★	Q702	DTC143ES (RN1201)
★★	Q603	2SC1845
★★	Q201—Q203, Q601, Q602, Q703, Q711, Q712, Q715, Q716	2SC2458 (2SC2603)
★★	Q3, Q4	2SC2668
★★	Q2	2SC2786
★★	Q5 N-FET	2SK161 (2SK168)
★★	Q1 MOS-FET	2SK241
⚠ ★	D603	4D4B44 (RBV402)
★	D609, D612	RD12EB (HZ12EB)
★	D608	RD20EB (HZ20EB)
★	D604, D607	RD5.6EB (HZ5.6EB)
★	D103, D104, D605, D606, D610, D611, D702—D709, D711, D712	1SS131
⚠ ★	D201, D202, D601, D602	11E2 (S5566)
★	D1, D2	1TT301
★	D101, D102	SVC321C2

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
★★	S301 Push switch (TAPE MONITOR)	ASG-424
★★	S701—S712 Tact switch (STATION CALL 1-10 11-20)	ASG-712
★★	S302 Push switch (AUX/VCR2, CD/VCR1, PHONO, TUNER)	SUJ5L2B2B2B2L
★	RY501 Relay	ASR-1005 (ASR-111)

COILS, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	T101 AM ANT transformer	ATB-099
	L101 AM OSC coil	ATB-110
	T1 FM RF transformer	ATC-194
	L2 FM OSC coil	ATC-269
	T2 FM coupling transformer	ATE-063
	L102 FM Detection coil	ATE-079
	F2, F3 FM Ceramic filter	ATF-126
	F1 FM Band pass filter	ATF-155
	F103 AM Ceramic filter	ATF1004
	L103 Inductor	ATH-108
	L501, L502 Choke coil	ATH-133
	L1 Inductor	LAU2R2M
	T103 AM IF transformer	ATB1002

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C613,C614 Ceramic capacitor (0.01μF/150V)	ACG-019
	C606, C607 Electrolytic (4700μF/50V)	ACH-252
	C715	ACH-1011
	TC101, TC106 Ceramic trimmer	ACM-026
	C102	CCCCH150J50
	C16	CCCSL010C50
	C505, C506	CCCSL101J50
	C17	CCCSL150J50
	C112, C303, C304	CCCSL221J50
	C1	CCDCH040C50
	C13	CCDCH080D50
	C11	CCDCH150J50
	C12, C703, C704	CCDCH330J50
	C3	CCDRH180J50
	C5	CCDSL020C50
	C7	CCDSL101J50
	C14	CCDTH150J50
	C201, C501, C502	CEANP010M50
	C114, C204, C207, C210—C212, C705	CEAS010M50
	C708	CEAS1R5M50
	C511, C512, C609, C612	CEAS100M50
	C10, C202, C604	CEAS101M16
	C507, C508	CEAS101M25
	C513	CEANP470M50
	C605	CEAS2R2M100
	C118, C301, C302, C313, C314, C317, C318	CEAS2R2M50
	C206	CEAS221M16
	C701	CEAS222M6
	C120, C203, C711	CEAS3R3M50
	C111, C123, C710	CEAS330M16
	C121	CEAS4R7M50
	C119, C305, C306, C610, C706	CEAS470M10
	C601, C602	CEAS470M25
	C509, C510	CEAS470M50
	C608	CEAS471M35
	C603	CEAS471M6
	C117, C702, C707	CKCYB102K50
	C503, C504	CKCYB122K50
	C107, C113, C115, C125, C213, C307, C308, C709, C712,C713	CKCYF103Z50
	C104, C105, C116, C124	CKCYF223Z50
	C122	CKCYF473Z50
	C315, C316	CKDYB391K50
	C2, C4, C8, C9, C15, C18	CKDYF103Z50
	C108, C109	CKDYF223Z50
	C110	CKDYF473Z50
	C208, C209	CQMA183K50
	C309, C310	CQMA242J50
	C514–C517	CQMA104K50
	C311, C312	CQMA822J50
	C205	CQSA102J50
	C103	CQSA431J50
	C15	CKDYB102K50

RESISTORS

NOTE: When ordering resistors, convert the resistance va into code form, and then rewrite the part no. as befo

Mark	Symbol & Description	Part No.
⚠	R507–R512	RD1/2PMF☐☐☐J
⚠	R515	RD1/4PML680J
⚠	R516–R519, R522	RD1/4PMF☐☐☐J
	R7	RD1/4PM151J
⚠	R603	RS1LMF181J
⚠	R608	RS1LMF821J
⚠	R602, R607	RS2LMF152J
★	VR201 Semi-fixed (10k)	VRTB6VS103
★	VR101 Semi-fixed (47k)	VRTB6VS473
	Other resistors	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
	ANT terminal	AKA-018
	Terminal(4P) (TAPE/ADAPTOR REC/OUT, PLAY/IN)	AKB-115
	Terminal(6P) (INPUT PHONO CD/VCR1, AUX/VCR2)	AKB-117
★	X701 Crystal resonator	ASS-025

Control Assembly (GWY-379)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401, IC402 AUDIO IC	BA3812L
★★	IC403 OP-AMP IC	M5218PF
★★	Q401	DTA124ES (RN2203)
★★	Q402	DTC124ES (RN1203)
★	D402 LED assembly	AEL-460
★	D404—D406 LED assembly	AEL-461
★	D403 LED assembly	AEL-463
★	D407, D409	1SS131
★	D401	11E2

SWITCHES

Mark	Symbol & Description	Part No.
★★	S401—S407 Tact swich (FM/MONO, FM, AM, AUTO/MANUAL, MEMORY, SELECT, SIMULATED STEREO)	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C431, C432	CEASR68M50
	C405, C406	CEAS101M10
	C409—C412	CEJA4R7M35
	C427, C428	CEJAR22M50
	C401, C402, C433, C434	CEJA4R7M35
	C403, C404	CEAS470M25
	C415, C416	CKCYB122K50
	C407, C408	CKCYB331K50
	C413, C414	CKCYB391K50
	C435, C436	CKCYF103Z50
	C425, C426	CQMA123K50
	C421, C422	CQMA223K50
	C417, C418	CQMA392K50
	C429, C430	CQMA393K50
	C423, C424	CQMA682K50
	C419, C420	CQMA683K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR403—VR407 Variable resistor (Slide type,30k), (GRAPHIC EQUALIZER)	ACX-152
★	VR401 Variable resistor (BALANCE CONTROL, 250k)	ACX-153
★	VR402 Variable resistor (VOLUME CONTROL, 100k)	ACX-154
	R419	RD1/2PM561J
	Other resistors	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
★	V401 Fluorescent tube	AAV-039

Headphone Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Push switch (SPEAKERS A, B)	SUJ6LYXS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R901, R902	RS1PMF331J
⚠	R903, R904	RS1PMF102J

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

SP Terminal Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-111

S.S Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC802 OP-AMP IC	M5201P
★★	IC801 OP-AMP IC	M5218PF

CAPACITORS

Mark	Symbol & Description	Part No.
	C801	CEAS2R2M50
	C804	CEAS4R7M50
	C803	CKCYB331K50
	C805, C806	CKCYF103Z50
	C802	CQMA332K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (6P)	AKP-045

FOR SX-1500(BK)/HEZ TYPE

Complex Assembly (GWM-501)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101 AM/FM IC	LA1265S
★★	IC301 OP-AMP IC	NJM4558DXC
★★	IC701 U-COM IC	PD2017
⚠ ★★	IC501 AUDIO-IC	STK4171-2S
★★	IC201 FM MAX IC	TA7343AP
★★	IC702 PLL IC	TC9172P
★★	IC601 REGURATOR IC	μPC78M12H
★★	Q704, Q706—Q708	DTA124ES (RN2203)
★★	Q709, Q714	DTA143ES (RN2201)
★★	Q701, Q705, Q710, Q713	DTC124ES (RN1203)
★★	Q702	DTC143ES (RN1201)
★★	Q603	2SC1845
★★	Q201—Q203, Q601, Q602, Q703, Q711, Q712, Q715, Q716	2SC2458ES (2SC2603)
★★	Q3	2SC2668
⚠ ★	D603	4D4B44 (RBV402)
★	D609, D612	RD12EB (HZ12EB)
★	D608	RD20EB (HZ20EB)
★	D604, D607	RD5.6EB (HZ5.6EB)
★	D103, D104, D605, D606, D610, D611, D702—D709, D711	1SS131
⚠ ★	D201, D202, D601, D602	11E2 (S5566)
★	D101, D102	SVC321C2

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
★★	S301 Push switch (TAPE MONITOR)	ASG-424
★★	S701—S712 Tact switch (STATION CALL 1-10 11-20)	ASG-712
★★	S302 Push switch (AUX/VCR2, CD/VCR1, PHONO, TUNER)	SUJ5L2B2B2B2L
★	RY501 Relay	ASR-111

COILS, TRANSFORMER AND FILTERS

Mark	Symbol & Description	Part No.
	T101 AM ANT transformer	ATB-099
	L101 AM OSC coil	ATB-114
	L102 FM detection coil	ATE-079
	F2 FM ceramic filter	ATF-107
	F3 FM ceramic filter	ATF-119
	F104 Filter	ATF-146
	F101 AM ceramic filter	ATF-208
	L501, L502 AF choke coil	ATH-059
	L103 Inducter	ATH-108

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C613, C614 Ceramic capacitor (0.01μF/150V)	ACG-019
	C606, C607 Electrolytic (4700μF/50V)	ACH-252
	C715	ACH-902
	TC101, TC106 Ceramic trimmer	ACM-026
	C102	CCCCH150J50
	C703, C704	CCDCH330J50
	C505, C506	CCCSL101J50
	C112	CCCSL221J50
	C201, C501, C502	CEANP010M50
	C114, C204, C207, C210—C212, C705	CEAS010M50
	C708	CEAS1R5M50
	C511, C512, C609, C612	CEAS100M50
	C10, C202, C604	CEAS101M16
	C507, C508	CEAS101M25
	C513	CEANP470M50
	C605	CEAS2R2M100
	C118, C301, C302, C313, C314, C317, C318	CEAS2R2M50
	C206	CEAS221M16
	C701	CEAS222M6
	C120, C203, C711	CEAS3R3M50
	C111, C123, C710	CEAS330M16
	C121	CEAS4R7M50
	C119, C305, C306, C610, C706	CEAS470M10
	C601, C602	CEAS470M25
	C214	CKDYB152K50
	C303, C304, C315, C316	CKDYB391K50
	C316–C338	
	C319' C320, C215	CKDYB681K50
	C321, C322	CKDYB821K50
	C509, C510	CEAS470M50
	C608	CEAS471M35
	C603	CEAS471M6
	C117, C702, C707	CKCYB102K50
	C503, C504	CKCYB122K50
	C107, C113, C115, C125, C213, C307, C308, C709, C712, C713, C714	CKCYF103Z50
	C104, C105, C116, C124	CKCYF223Z50
	C122	CKCYF473Z50
	C108, C109	CKDYF223Z50
	C110	CKDYF473Z50
	C208, C209	CQMA153K50
	C309, C310	CQMA242J50
	C514–C517	CQMA104K50
	C311, C312	CQMA822J50
	C205	CQSA102J50
	C103	CQSA431J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R507–R512	RD1/2PMF ☐☐☐J
	R515	RD1/4PMFL680J
	R516–R519, R522	RD1/4PMF ☐☐☐J
	R7	RD1/4PM151J
	R603	RS1LMF181J
	R608	RS1LMF821J
	R601	RS2LMF122J
	R602, R607	RS2LMF152J
★	VR201 Semi-fixed (10k)	VRTB6VS103
★	VR101 Semi-fixed (47k)	VRTB6VS473
	Other resistors.	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
	ANT terminal	AKA-023
	Terminal (4P) (TAPE/ADAPTOR • REC/OUT, PLAY/IN)	AKB-115
	Terminal (6P) (INPUT • PHONO, CD/VCR1, AUX/VCR2)	AKB-117
★	X701 Crystal resonator	ASS-025

Control Assembly (GWY-379)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401, IC402 AUDIO IC	BA3812L
★★	IC403 OP-AMP IC	M5218PF
★★	Q401	DTA124ES (RN2203)
★★	Q402	DTC124ES (RN1203)
★	D402 LED assembly	AEL-460
★	D404—D406 LED assembly	AEL-461
★	D403 LED assembly	AEL-463
★	D407 D409	1SS131
★	D401	11E2

SWITCHES

Mark	Symbol & Description	Part No.
★★	S401—S407 Tact swich (FM/MONO, FM, AM, AUTO/MANUAL, MEMORY, SELECT, SIMULATED STEREO)	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C431, C432	CEASR68M50
	C405, C406	CEAS101M10
	C409—C412	CEJA4R7M35
	C427, C428	CEJAR22M50
	C401, C402, C433, C434	CEJA4R7M35
	C403, C404	CEAS470M25
	C415, C416	CKCYB122K50
	C407, C408	CKCYB331K50
	C413, C414	CKCYB391K50
	C435, C436	CKCYF103Z50
	C425, C426	CQMA123K50
	C421, C422	CQMA223K50
	C417, C418	CQMA392K50
	C429, C430	CQMA393K50
	C423, C424	CQMA682K50
	C419, C420	CQMA683K50

RESISTORS

NOTE: When ordering resistors, convert the resistance valu into code form, and then rewrite the part no. as befor

Mark	Symbol & Description	Part No.
★	VR403—VR407 Variable resistor (Slide type, 30k), (GRAPHIC EQUALIZER)	ACX-152
★	VR401 Variable resistor (BALANCE CONTROL, 250k)	ACX-153
★	VR402 Variable resistor (VOLUME CONTROL, 100k)	ACX-154
	R419	RD1/2PM561J
	Other resistors	RD1/8PM☐☐☐J

OTHERS

Mark	Symbol & Description	Part No.
★	V401 Fluorescent tube	AAV-039

Headphone Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Push switch (SPEAKERS A, B)	SUJ6LYXS

CAPACITORS

Mark	Symbol & Description	Part No.
	C911, C912	CKDYB472K50

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R901, R902	RS1LMF331J
⚠	R903, R904	RS1LMF102J

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

SP Terminal Assembly

COILS

Mark	Symbol & Description	Part No.
	L901—L904 AF choke coil	ATH—133

CAPACITORS

Mark	Symbol & Description	Part No.
	C907—C910	CKDYB103K50

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/4PMFL100J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS) 8P	AKE—111

S.S Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC802 OP-AMP IC	M5201P
★★	IC801 OP-AMP IC	M5218PF

CAPACITORS

Mark	Symbol & Description	Part No.
	C801	CEAS2R2M50
	C804	CEAS4R7M50
	C803	CKCYB331K50
	C805, C806	CKCYF103Z50
	C802	CQMA332K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM☐☐☐J

Line filter Assembly (AWT1003)

FILTER

Mark	Symbol & Description	Part No.
	L1 Line filter	ATF—151

FOR SX-1500A(BK)/YP TYPE

Complex Assembly (GWM-500)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101 AM/FM IC	LA1265S
★★	IC301 OP-AMP IC	NJM4558DXC
★★	IC701 U-COM IC	PD2017
⚠ ★★	IC501 AUDIO-IC	STK4171-2S
★★	IC201 FM MAX IC	TA7343AP
★★	IC702 PLL IC	TC9172P
★★	IC601 REGURATOR IC	µPC78M12H
★★	Q704,Q706—Q708, Q721	DTA124ES (RN2203)
★★	Q709, Q714	DTA143ES (RN2201)
★★	Q701, Q705, Q710, Q713 Q717, Q720	DTC124ES (RN1203)
★★	Q702	DTC143ES (RN1201)
★★	Q603	2SC1845
★★	Q201—Q203, Q601, Q602, Q703, Q711, Q712, Q715, Q716	2SC2458 (2SC2603)
★★	Q3, Q4	2SC2668
★★	Q2	2SC2786
★★	Q5 N-FET	2SK161 (2SK168)
★★	Q1 MOS-FET	2SK241
⚠ ★	D603	4D4B44 (RBV402)
★	D609, D612	RD12EB (HZ12EB)
★	D608	RD20EB (HZ20EB)
★	D604, D607	RD5.6EB (HZ5.6EB)
★	D103, D104, D605, D606, D610, D611, D702—D708, D711, D712	1SS131
⚠ ★	D201, D202, D601, D602	11E2 (S5566)
★	D1, D2	1TT301
★	D101, D102	SVC321C2

SWITCHES AND RELAY

Mark	Symbol & Description	Part No.
★★	S301 Push switch (TAPE MONITOR)	ASG-424
★★	S701—S712 Tact switch (STATION CALL 1-10 11-20)	ASG-712
★★	S302 Push switch (AUX/VCR2, CD/VCR1, PHONO, TUNER)	SUJ5L2B2B2B2L
★	RY501 Relay	ASR-1005 (ASR-111)

COILS, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	T101 AM ANT transformer	ATB-099
	L101 AM OSC coil	ATB-110
	T1 FM RF transformer	ATC-194
	L2 FM OSC coil	ATC-269
	T2 FM coupling transformer	ATE-063
	L102 FM Detection coil	ATE-079
	F2, F3 FM Ceramic filter	ATF-126
	F1 FM Band pass filter	ATF-155
	F103 AM Ceramic filter	ATF1004
	L103 Inductor	ATH-108
	L501, L502 Choke coil	ATH-133
	L1 Inductor	LAU2R2M
	T103 AM IF transformer	ATB1002

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C613,C614 Ceramic capacitor (0.01µF/150V)	ACG-019
	C606, C607 Electrolytic (4700µF/50V)	ACH-252
	C715	ACH-1011
	TC101, TC106 Ceramic trimmer	ACM-026
	C102	CCCCH150J50
	C16	CCCSL010C50
	C505, C506	CCCSL101J50
	C17	CCCSL150J50
	C112, C303, C304	CCCSL221J50
	C1	CCDCH040C50
	C13	CCDCH080D50
	C11	CCDCH150J50
	C12, C703, C704	CCDCH330J50
	C3	CCDRH180J50
	C5	CCDSL020C50
	C7	CCDSL101J50
	C14	CCDTH150J50
	C201, C501, C502	CEANP010M50
	C114, C204, C207, C210—C212, C705	CEAS010M50
	C708	CEAS1R5M50
	C511, C512, C609, C612	CEAS100M50
	C10, C202, C604	CEAS101M16
	C507, C508	CEAS101M25
	C513	CEANP470M50
	C605	CEAS2R2M100
	C118, C301, C302, C313, C314, C317, C318	CEAS2R2M50
	C206	CEAS221M16
	C701	CEAS222M6
	C120, C203, C711	CEAS3R3M50
	C111, C123, C710	CEAS330M16
	C121	CEAS4R7M50
	C119, C305, C306, C610, C706	CEAS470M10
	C601, C602	CEAS470M25

Printed in Japan

Mark	Symbol & Description	Part No.
	C509, C510	CEAS470M50
	C608	CEAS471M35
	C603	CEAS471M6
	C117, C702, C707	CKCYB102K50
	C503, C504	CKCYB122K50
	C107, C113, C115, C125, C213, C307, C308, C709, C712,C713	CKCYF103Z50
	C104, C105, C116, C124	CKCYF223Z50
	C122	CKCYF473Z50
	C315, C316	CKDYB391K50
	C2, C4, C8, C9, C15, C18	CKDYF103Z50
	C108, C109	CKDYF223Z50
	C110	CKDYF473Z50
	C208, C209	CQMA183K50
	C309, C310	CQMA242J50
	C514–C517	CQMA104K50
	C311, C312	CQMA822J50
	C205	CQSA102J50
	C103	CQSA431J50
	C15	CKDYB102K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R507–R512	RD1/2PMF□□□J
⚠	R515	RD1/4PML680J
⚠	R516–R519, R522	RD1/4PMF□□□J
	R7	RD1/4PM151J
⚠	R603	RS1LMF181J
⚠	R608	RS1LMF821J
⚠	R602, R607	RS2LMF152J
★	VR201 Semi-fixed (10k)	VRTB6VS103
★	VR101 Semi-fixed (47k)	VRTB6VS473
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	ANT terminal	AKA-018
	Terminal (4P) (TAPE/ADAPTOR REC/OUT, PLAY/IN)	AKB-115
	Terminal (6P) (INPUT PHONO CD/VCR1, AUX/VCR2)	AKB-117
★	X701 Crystal resonator	ASS-025

Control Assembly (GWY-379)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC401, IC402 AUDIO IC	BA3812L
★★	IC403 OP-AMP IC	M5218PF
★★	Q401	DTA124ES (RN2203)
★★	Q402	DTC124ES (RN1203)
★	D402 LED assembly	AEL-460
★	D404—D406 LED assembly	AEL-461
★	D403 LED assembly	AEL-463
★	D407, D409	1SS131
★	D401	11E2

SWITCHES

Mark	Symbol & Description	Part No.
★★	S401—S407 Tact swich (FM/MONO, FM, AM, AUTO/MANUAL, MEMORY, SELECT, SIMULATED STEREO)	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C431, C432	CEASR68M50
	C405, C406	CEAS101M10
	C409—C412	CEJA4R7M35
	C427, C428	CEJAR22M50
	C401, C402, C433, C434	CEJA4R7M35
	C403, C404	CEAS470M25
	C415, C416	CKCYB122K50
	C407, C408	CKCYB331K50
	C413, C414	CKCYB391K50
	C435, C436	CKCYF103Z50
	C425, C426	CQMA123K50
	C421, C422	CQMA223K50
	C417, C418	CQMA392K50
	C429, C430	CQMA393K50
	C423, C424	CQMA682K50
	C419, C420	CQMA683K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR403—VR407 Variable resistor (Slide type, 30k) (GRAPHIC EQUALIZER)	ACX-152
★	VR401 Variable resistor (BALANCE CONTROL, 250k)	ACX-153
★	VR402 Variable resistor (VOLUME CONTROL, 100k)	ACX-154
	R419	RD1/2PM561J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V401 Fluorescent tube	AAV-039

Headphone assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Push switch (SPEAKERS A, B)	SUJ6LYXS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R901, R902	RS1PMF331J
⚠	R903, R904	RS1PMF102J

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

SP Terminal assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-111

S.S Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC802 OP-AMP IC	M5201P
★★	IC801 OP-AMP IC	M5218PF

CAPACITORS

Mark	Symbol & Description	Part No.
	C801	CEAS2R2M50
	C804	CEAS4R7M50
	C803	CKCYB331K50
	C805, C806	CKCYF103Z50
	C802	CQMA332K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (6P)	AKP-045

AM MPX Assembly (AWD1001)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC901 AM IC	MC13020P
★★	Q904,Q910	2SA933S (2SA1115)
★★	Q902,Q903,Q905-Q908,	2SC1740S
★★	Q911	(2SC2603)
★★	Q901	2SC2668
★★	Q909	2SC3400
★	D903	RD9.1EB
★	D902	1SS131
★	TH901	TH103

COIL

Mark	Symbol & Description	Part No.
	L901 Inductor	ATH-116

CAPACITORS

Mark	Symbol & Description	Part No.
	C915	CCDCH470J50
	C916,C917	CEASR47M50
	C902,C910	CEAS100M25
	C933,C937, C938	CEAS101M16
	C904,C911,C919,C931,C932	CEAS2R2M50
	C934,C936	CEAS220M25
	C935	CEAS330M16
	C903,C918,C920	CEAS4R7M50
	C912	CEAS470M10
	C909	CKCYB102K50 (CKDYB102K50)
	C929,C93	CKCYB222K50
	C906–C908,C914	CKCYB332K50 (CKDYB332K50)
	C901,C905,C914	CKCYF103Z50 (CKDYF103Z50)
	C923–C928	CQMA154J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR901 Semi-fixed (22k)	VRTB6VS223
	R950, R951	RD1/4VM391J
	Other resisters	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	X901 Ceramic resonator	ASS-045

MEMO

’9)

	Part No.
	BA3812L
	M5218PF
	DTA124ES (RN2203)
	DTC124ES (RN1203)
	AEL-460
ıbly	AEL-461
	AEL-463
	1SS131
	11E2

	Part No.
	ASG-711
‹M,	
EO)	

	Part No.
	CEASR68M50
	CEAS101M10
	CEJA4R7M35
	CEJAR22M50
4	CEJA4R7M35
	CEAS470M25
	CKCYB122K50
	CKCYB331K50
	CKCYB391K50
	CKCYF103Z50
	CQMA123K50
	CQMA223K50
	CQMA392K50
	CQMA393K50
	CQMA682K50
	CQMA683K50

onvert the resistance value
write the part no. as before.

	Part No.
	ACX-152
, 30k)	
ZER)	
	ACX-153
OL,	
	ACX-154
OL,	
	RD1/2PM561J
	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
★	V401 Fluorescent tube	AAV-039

Headphone assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S901 Push switch (SPEAKERS A, B)	SUJ6LYXS

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R901, R902	RS1PMF331J
⚠	R903, R904	RS1PMF102J

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

SP Terminal assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKERS)	AKE-111

S.S Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC802 OP-AMP IC	M5201P
★★	IC801 OP-AMP IC	M5218PF

CAPACITORS

Mark	Symbol & Description	Part No.
	C801	CEAS2R2M50
	C804	CEAS4R7M50
	C803	CKCYB331K50
	C805, C806	CKCYF103Z50
	C802	CQMA332K50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal(6P)	AKP-045

AM MPX Assembly (AWD1001)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC901 AM IC	MC13020P
★★	Q904,Q910	2SA933S (2SA1115)
★★	Q902,Q903,Q905-Q908,	2SC1740S
★★	Q911	(2SC2603)
★★	Q901	2SC2668
★★	Q909	2SC3400
★	D903	RD9.1EB
★	D902	1SS131
★	TH901	TH103

COIL

Mark	Symbol & Description	Part No.
	L901 Inductor	ATH-116

CAPACITORS

Mark	Symbol & Description	Part No.
	C915	CCDCH470J50
	C916,C917	CEASR47M50
	C902,C910	CEAS100M25
	C933,C937, C938	CEAS101M16
	C904,C911,C919,C931,C932	CEAS2R2M50
	C934,C936	CEAS220M25
	C935	CEAS330M16
	C903,C918,C920	CEAS4R7M50
	C912	CEAS470M10
	C909	CKCYB102K50 (CKDYB102K50)
	C929,C93	CKCYB222K50
	C906–C908,C914	CKCYB332K50 (CKDYB332K50)
	C901,C905,C914	CKCYF103Z50 (CKDYF103Z50)
	C923–C928	CQMA154J50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR901 Semi-fixed (22k)	VRTB6VS223
	R950, R951	RD1/4VM391J
	Other resisters	RD1/8PM□□□J

OTHERS

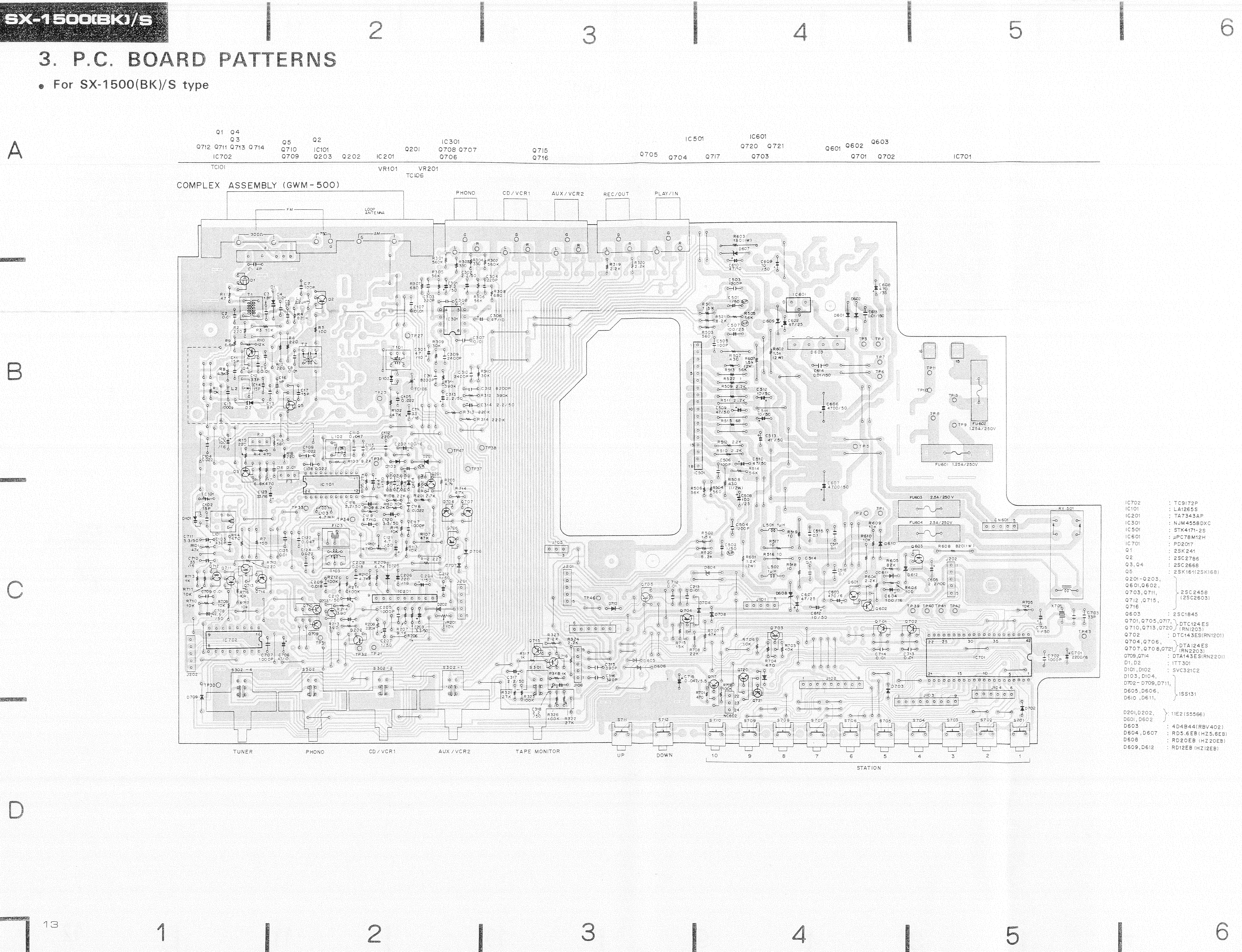
Mark	Symbol & Description	Part No.
★	X901 Ceramic resonator	ASS-045

[illegible] Printed in Japan

MEMO

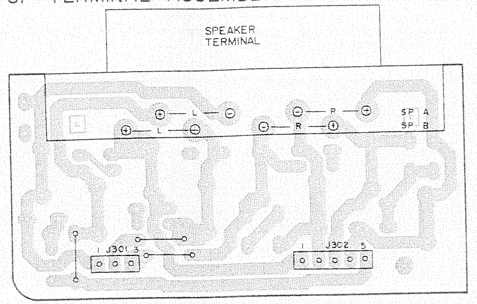
3. P.C. BOARD PATTERNS

- For SX-1500(BK)/S type

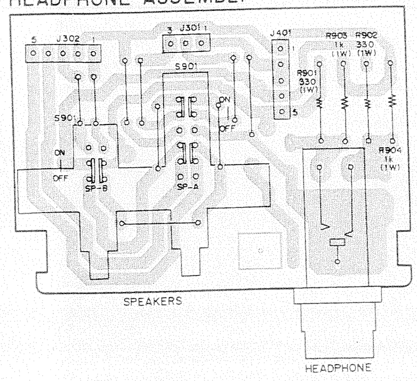

1
2
3
4
5
6
A
B
C
D
Q1 Q4
Q3
Q712 Q711 Q713 Q714
IC702
TC101
Q5
Q710
Q709
Q2
IC101
Q203
Q202
IC201
VR101
Q201
IC301
Q708 Q707
Q706
VR201
TC106
Q715
Q716
Q705
IC501
Q704
Q717
IC601
Q720 Q721
Q703
Q601
Q602
Q701
Q603
Q702
IC701
COMPLEX ASSEMBLY (GWM-500)
FM
LOOP ANTENNA
300Ω
75Ω
AM
PHONO
CD/VCR1
AUX/VCR2
REC/OUT
PLAY/IN
TUNER
PHONO
CD/VCR1
AUX/VCR2
TAPE MONITOR
UP
DOWN
10
9
8
7
6
5
4
3
2
1
STATION
FU601 1.25A/250V
FU602 1.25A/250V
FU603 2.5A/250V
FU604 2.5A/250V
RY501

IC702	: TC9172P
IC101	: LA1265S
IC201	: TA7343AP
IC301	: NJM4558DXC
IC501	: STK4171-2S
IC601	: µPC78M12H
IC701	: PD2017
Q1	: 2SK241
Q2	: 2SC2786
Q3, Q4	: 2SC2668
Q5	: 2SK161(2SK168)
Q201-Q203, Q601,Q602, Q703,Q711, Q712 ,Q715, Q716	2SC2458 (2SC2603)
Q603	: 2SC1845
Q701,Q705,Q717, Q710,Q713,Q720	DTC124ES (RN1203)
Q702	: DTC143ES(RN1201)
Q704,Q706, Q707,Q708,Q721	DTA124ES (RN2203)
Q709,Q714	: DTA143ES(RN2201)
D1, D2	: 1TT301
D101, D102	: SVC321C2
D103, D104, D702-D709,D711, D605,D606, D610 ,D611,	1SS131
D201,D202, D601, D602	: 11E2(S5566)
D603	: 4D4B44(RBV402)
D604, D607	: RD5.6EB(HZ5.6EB)
D606	: RD20EB (HZ20EB)
D609, D612	: RD12EB (HZ12EB)

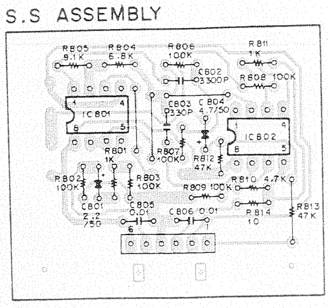
SP TERMINAL ASSEMBLY


SPEAKER
TERMINAL
SP-A
SP-B
L
R
J301
J302

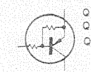
HEADPHONE ASSEMBLY

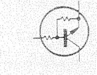

J302
J301
J401
S901
R903 1k
R902 330 (1W)
R901 330 (1W)
R904 1k (1W)
ON
OFF
SP-B
SP-A
SPEAKERS
HEADPHONE

S.S ASSEMBLY

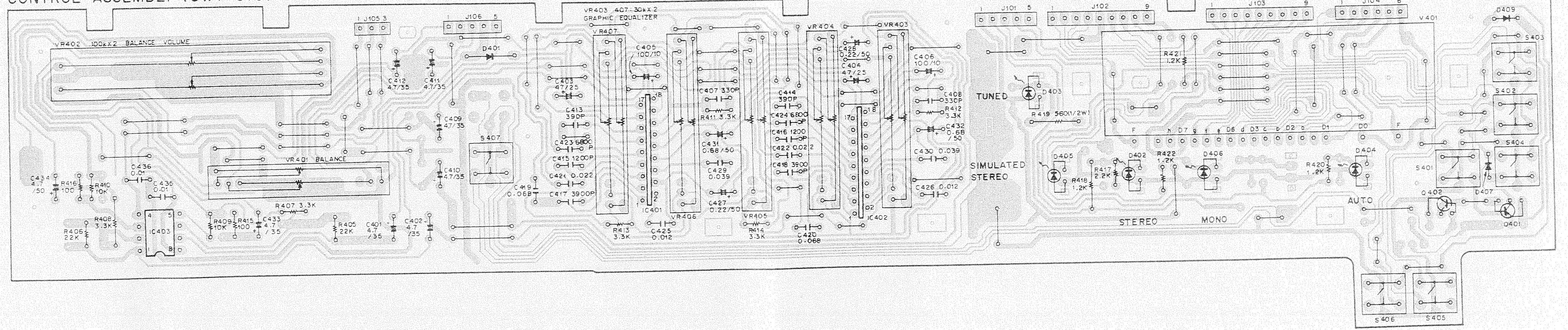

R805 8.1K
R804 6.8K
R806 100K
R811 1K
C802 0.0330P
R808 100K
IC801
IC802
C803 330P
C804 4.7/50
R801 1K
R807 100K
R812 47K
R802 100K
R803 100K
R809 100K
R810 4.7K
C801 2.2/50
C805 0.01
C806 0.01
R814 10
R813 47K

IC 801 : M5218PF
IC 802 : M5201P


Q401,
Q704, Q706 - Q709,
Q714, Q718, Q721


Q402, Q701, Q702, Q705,
Q710, Q713, Q717, Q720

CONTROL ASSEMBLY (GWY-379)

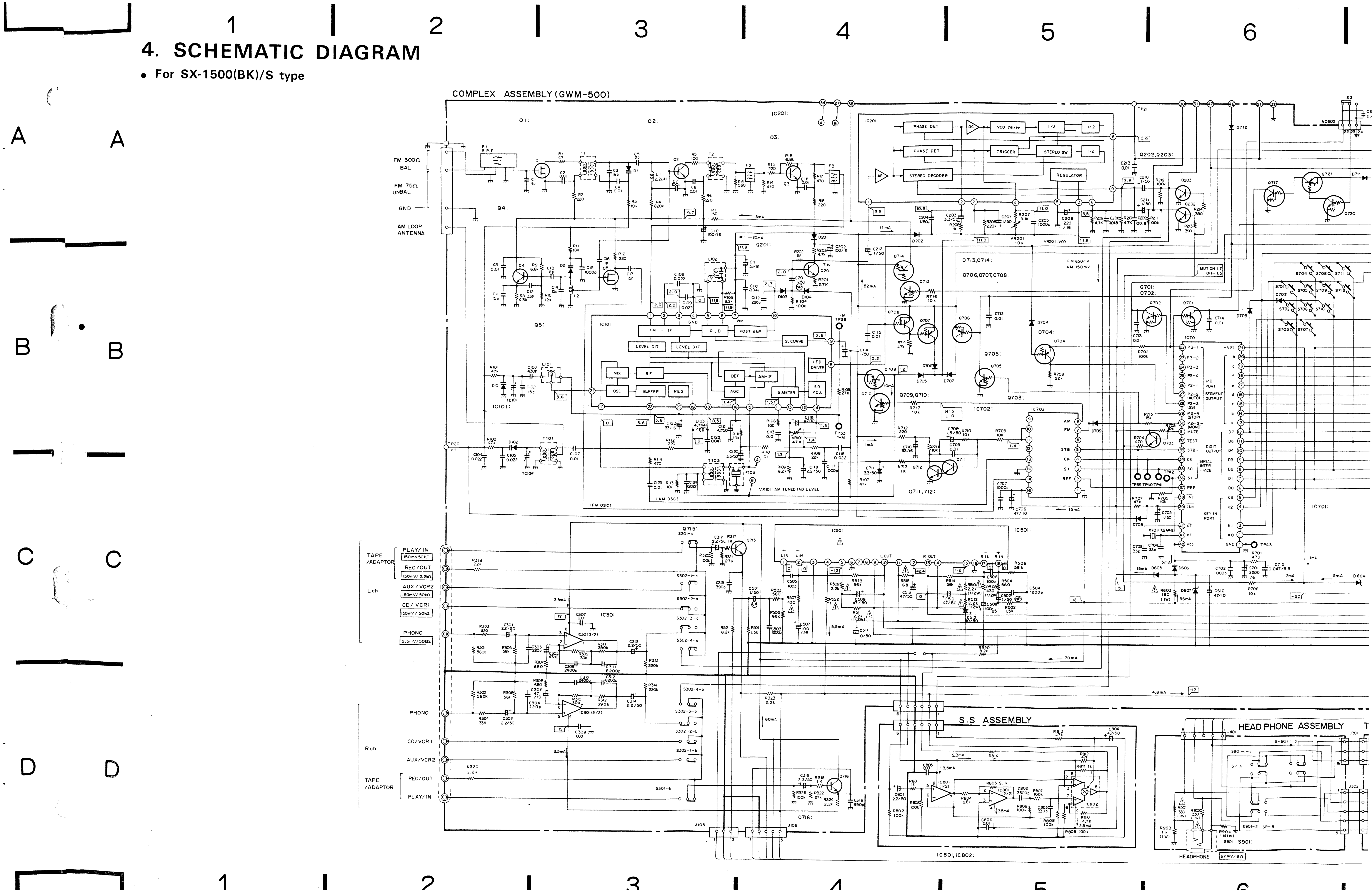

VR402 100k×2 BALANCE VOLUME
J105
J106
D401
VR403 407 30k×2 GRAPHIC EQUALIZER
VR407
VR404
VR403
J101
J102
J103
J104
V401
D409
S403
S402
S404
S401
S407
VR401 BALANCE
IC401
IC402
IC403
VR406
VR405
TUNED
D403
R419 560(1/2W)
R421 1.2K
SIMULATED
STEREO
D405
D402
D404
D406
STEREO
MONO
AUTO
Q402
Q401
D407
S406
S405

IC401, IC402 : BA3812L
IC403 : M5218PF
Q401 : DTA124ES(RN2203)
Q402 : DTC124ES(RN1203)
D407
D409 } 1SS131
D402 : AEL-460
D403 : AEL-463
D404 - D406 : AEL-461
D401 : 11E2

A
B
C
D

4. SCHEMATIC DIAGRAM

- **For SX-1500(BK)/S type**


1
2
3
4
5
6
A
B
C
D
COMPLEX ASSEMBLY (GWM-500)
FM 300Ω BAL
FM 75Ω UNBAL
GND
AM LOOP ANTENNA
F1 B.P.F
Q1:
Q2:
Q3:
Q4:
Q5:
IC201:
PHASE DET
VCO 76 kHz
TRIGGER
STEREO SW
STEREO DECODER
REGULATOR
Q202,Q203:
Q201:
IC101
FM - IF
Q, D
POST AMP
LEVEL DIT
S.CURVE
MIX
RF
OSC
BUFFER
REG
DET
AM-IF
AGC
S.METER
LED DRIVER
SD ADJ.
IFM OSC1
IAM OSC1
VR101 AM TUNED IND LEVEL
T-M TP36
TP33 T-M
Q713,Q714:
Q706,Q707,Q708:
FM 650mV
AM 150mV
Q709,Q710:
Q711,712:
Q703:
Q704:
Q705:
IC702:
Q701:
Q702:
IC701
MUT ON 1.7
OFF -1.5
I/O PORT
SEGMENT OUTPUT
DIGIT OUTPUT
SIRIAL INTERFACE
KEY IN PORT
TP39 TP40 TP41 TP42
TP43
X701 7.2MHz
IC701:
TAPE /ADAPTOR
PLAY/IN 150mV/50kΩ
REC/OUT 150mV/2.2kΩ
L ch
AUX/VCR2 150mV/50kΩ
CD/VCR1 150mV/50kΩ
PHONO 2.5mV/50kΩ
PHONO
R ch
CD/VCR1
AUX/VCR2
TAPE /ADAPTOR
REC/OUT
PLAY/IN
Q715:
Q716:
IC301:
IC501
IC501:
LIN
LOUT
R OUT
R IN
S.S ASSEMBLY
IC801,IC802:
HEAD PHONE ASSEMBLY
SP-A
SP-B
S901
HEADPHONE 67mV/8Ω
J105
J106
J301
J302

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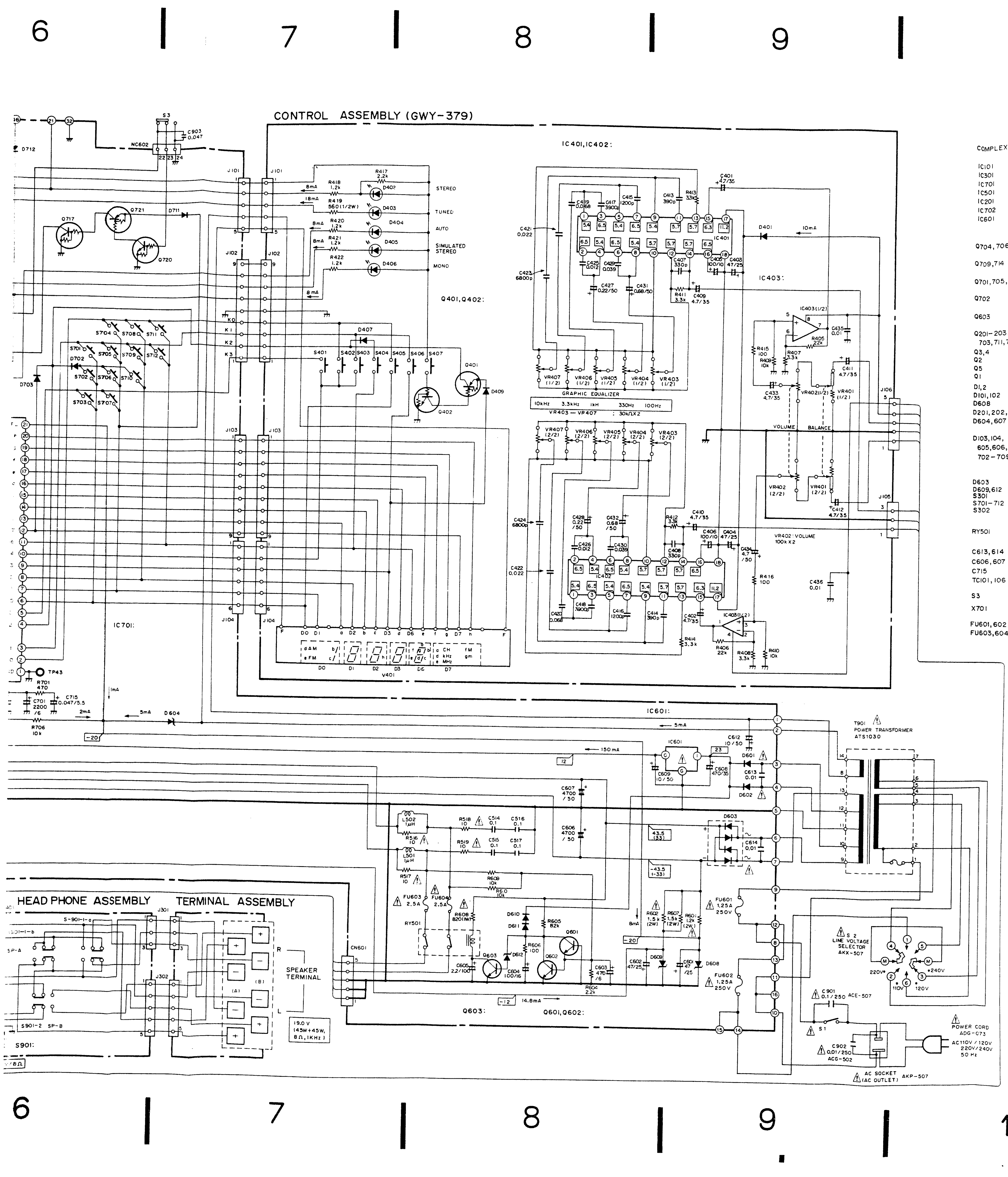

6
7
8
9
10
11
12
CONTROL ASSEMBLY (GWY-379)
IC401, IC402:
IC403:
Q401, Q402:
IC701:
IC601:
GRAPHIC EQUALIZER
10kHz 3.3kHz 1kH 330Hz 100Hz
VR403 — VR407 : 30kΩX2
VR402 : VOLUME 100k X 2
VOLUME
BALANCE
STEREO
TUNED
AUTO
SIMULATED STEREO
MONO
V401
T901 POWER TRANSFORMER ATS1030
HEAD PHONE ASSEMBLY
TERMINAL ASSEMBLY
SPEAKER TERMINAL
19.0 V (45W+45W, 8Ω, 1KHz)
S2 LINE VOLTAGE SELECTOR AKX-507
POWER CORD ADG-073
AC110V / 120V 220V/240V 50 Hz
AC SOCKET (AC OUTLET) AKP-507
Q603:
Q601, Q602:
S901:

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

COMPLEX ASSEMBLY

IC101	LA1265S
IC301	NJM45558DXC
IC701	PD2017
IC501	STK4171-2S
IC201	TA7343AP
IC702	TC9172P
IC601	μPC78M12H
Q704, 706-708, 721	DTA124ES (RN2203)
Q709, 714	DTA143ES (RN2201)
Q701, 705, 710, 713, 717	DTC124ES (RN1203)
Q702	DTC143ES (RN1201)
Q603	2SC1845
Q201-203, 601, 602, 703, 711, 712, 715, 716	2SC2458 (2SC2603)
Q3, 4	2SC2668
Q2	2SC2786
Q5	2SK161(2SK168)
Q1	2SK241
D1, 2	ITT301
D101, 102	SVC321C2
D608	RD20EB(HZ20EB)
D201, 202, 601, 602	11E2(S5566)
D604, 607	RD5.6EB (HZ5.6EB)
D103, 104, 605, 606, 610, 611, 702-709	1SS131
D603	4D4B44(RBV402)
D609, 612	RD12EB(HZ12EB)
S301	ASG-424
S701-712	ASG-712
S302	SUJ5L2B2B2B2L
RY501	ASR-111
C613, 614	ACG-190
C606, 607	ACH-252
C715	ACH-902
TC101, 106	ACM-026
S3	ASH-016
X701	ASS-025
FU601, 602	AEK-123
FU603, 604	AEK-120

CONTROL ASSEMBLY

IC401, 402	BA3812L
IC403	M5218PF
Q401	DTA124ES (RN2203)
Q402	DTC124ES (RN1203)
D402	AEL-460
D404-406	AEL-461
D403	AEL-463
D407, 409	1SS131
D401	11E2
VR403-407	ACX-152
VR401	ACX-153
VR402	ACX-154
S401-407	ASG-711
V401	AAV-039

S.S ASSEMBLY

IC801	M5218PF
IC802	M5201P

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   ▭V : Signal voltage at 45W + 45 W, 8Ω output (1 kHz)
   ▭ : DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA: DC current at no input signal
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ✕ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

   THE UNDERLINED INDICATES THE SWITCH POSITION

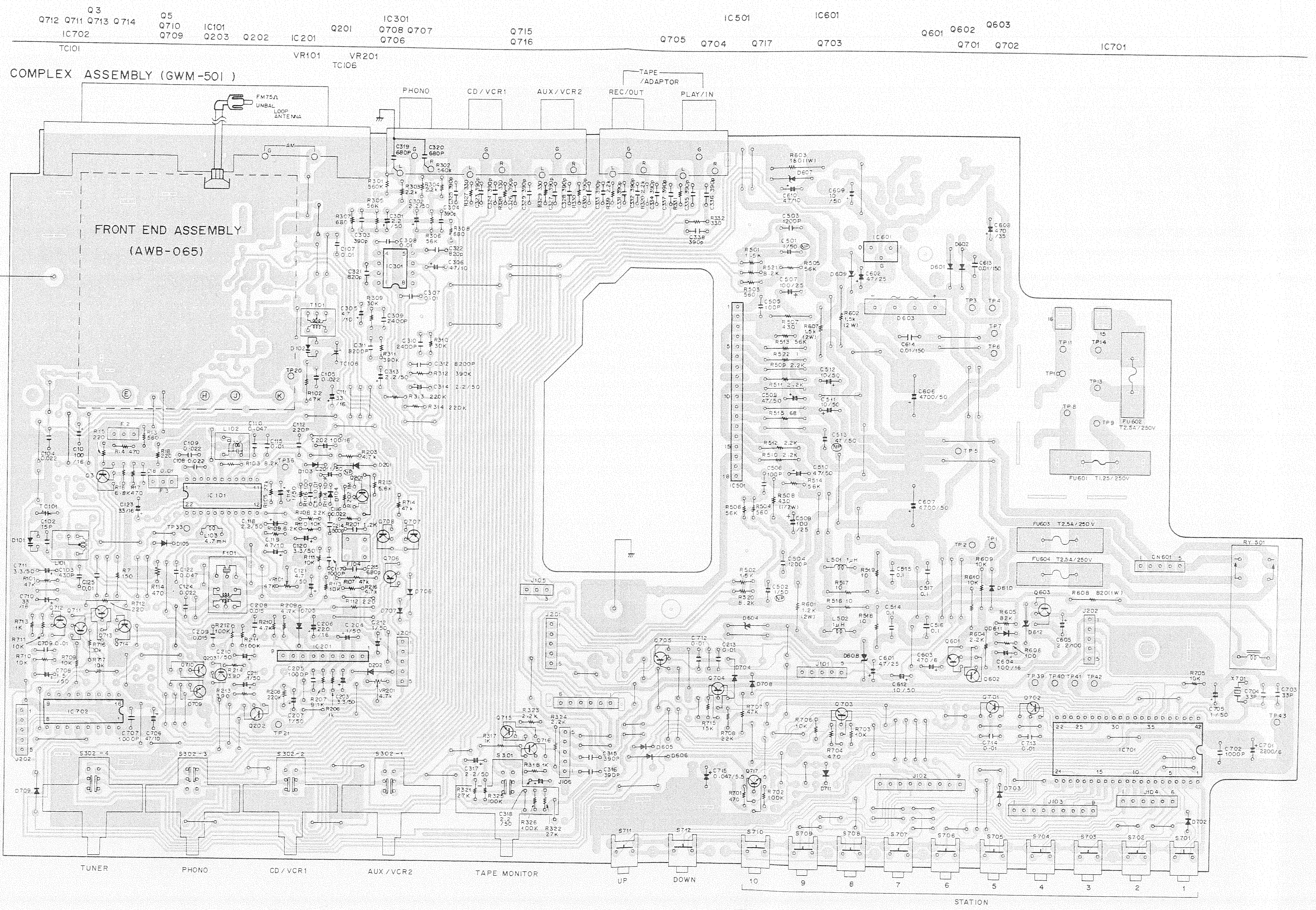
S1	POWER ON-OFF	S701	STATION1
S301	TAPE MONITER	S702	STATION2
S302-1	AUX / VCR2	S703	STATION3
S302-2	CD / VCR1	S704	STATION4
S302-3	PHONO	S705	STATION5
S302-4	TUNER	S706	STATION6
S401	AUTO/MONO	S707	STATION7
S402	FM	S708	STATION8
S403	AM	S709	STATION9
S404	AUTO/MANUAL	S710	STATION10
S405	MEMORY	S711	UP
S406	SELECT	S712	DOWN
S407	SIMULATED STEREO		

S3

S901: SPEAKERS
S901-a SP-A ON-OFF
S901-b SP-B ON-OFF

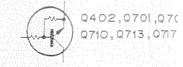
5. P.C. BOARD PATTERNS

- For SX-1500(BK)/HEZ type

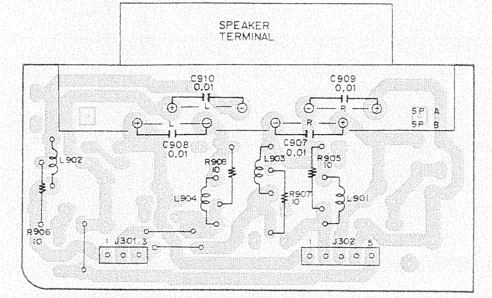

Q712 Q711 Q3 Q713 Q714
IC702
TC101
Q5
Q710
Q709
IC101
Q203
Q202
IC201
VR101
Q201
IC301
Q708 Q707
Q706
VR201
TC106
Q715
Q716
Q705
Q704
IC501
Q717
IC601
Q703
Q601
Q602
Q701
Q603
Q702
IC701
COMPLEX ASSEMBLY (GWM-501)
FM75Ω UNBAL
LOOP ANTENNA
AM
FRONT END ASSEMBLY
(AWB-065)
PHONO
CD/VCR1
AUX/VCR2
TAPE /ADAPTOR
REC/OUT
PLAY/IN
FU601 T1.25/250V
FU602 T2.5A/250V
FU603 T2.5A/250V
FU604 T2.5A/250V
RY301
S302-4
S302-3
S302-2
S302-1
S301
TUNER
PHONO
CD/VCR1
AUX/VCR2
TAPE MONITOR
S711
S712
S710
S709
S708
S707
S706
S705
S704
S703
S702
S701
UP
DOWN
10
9
8
7
6
5
4
3
2
1
STATION

IC702	: TC9172P
IC101	: LA1265S
IC201	: TA7343AP
IC301	: NJM4558DXC
IC501	: STK4171-2S
IC601	: µPC78M12H
IC701	: PD2017
Q3	: 2SC2668
Q201-Q203, Q601,Q602, Q703,Q711, Q712 ,Q715, Q716	2SC2458ES (2SC2603)
Q603	: 2SC1845
Q701,Q705, Q710,Q713	DTC124ES (RN1203)
Q702	: DTC143ES(RN1201)
Q704,Q706, Q707,Q708	DTA124ES (RN2203)
Q709,Q714	: DTA143ES(RN2201)
D101, D102	: SVC321C2
D103, D104, D605, D606, D610, D611, D702-D709, D711	: 1SS131
D201, D202, D601, D602	: 11E2(S5566)
D603	: 4D4B44 (RBV 402)
D604 , D607	: RD5.6EB(HZ5.6EB)
D608	: RD20EB (HZ20EB)
D609, D612	: RD12EB (HZ12EB)

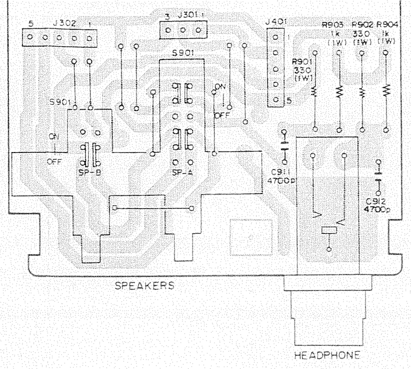
Q401,
Q704,Q706-Q
Q714


Q402,Q701,Q70
Q710,Q713,Q717

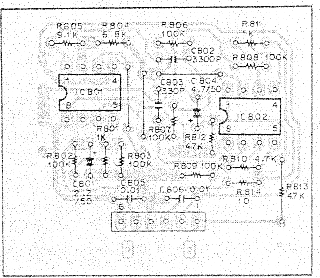
SP TERMINAL ASSEMBLY


SPEAKER TERMINAL
C910 0.01
C909 0.01
C908 0.01
C907 0.01
L
R
SP A
SP B
L902
L903
L904
L901
R906 10
R905
R907
R908
J301 3
J302 5

HEADPHONE ASSEMBLY


J302
J301
J401
R903 1k (1W)
R902 330 (1W)
R904 1k (1W)
R901 330 (1W)
S901
S901
ON
OFF
SP-B
SP-A
C811 4700p
C812 4700p
SPEAKERS
HEADPHONE

S.S ASSEMBLY


R805 6.1K
R804 6.8K
R806 100K
R811 1K
C802 3300P
R808 100K
IC801
IC802
C803 330P
C804 4.7/50
R801 1K
R807 100K
R812 47K
R802 100K
R803 100K
R809 100K
R810 4.7K
C801 0.1/50
C805 0.01
C806 0.01
R814 10
R813 47K

IC 801 : M5218PF
IC 802 : M5201P

C9172P
A1265S
A7343AP
M4558DXC
K4171-2S
C78M12H
D2017

SC2668

2SC2458ES
(2SC2603)

SC1845

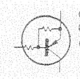
DTC124ES
(RN1203)
TC143ES(RN1201)

DTA124ES
(RN2203)
TA143ES(RN2201)

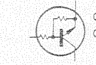
VC321C2
SS131

E2(S5566)

D4B44 (RBV 402)
D5.6EB (HZ5.6EB)
D20EB (HZ20EB)
D12EB (HZ12EB)

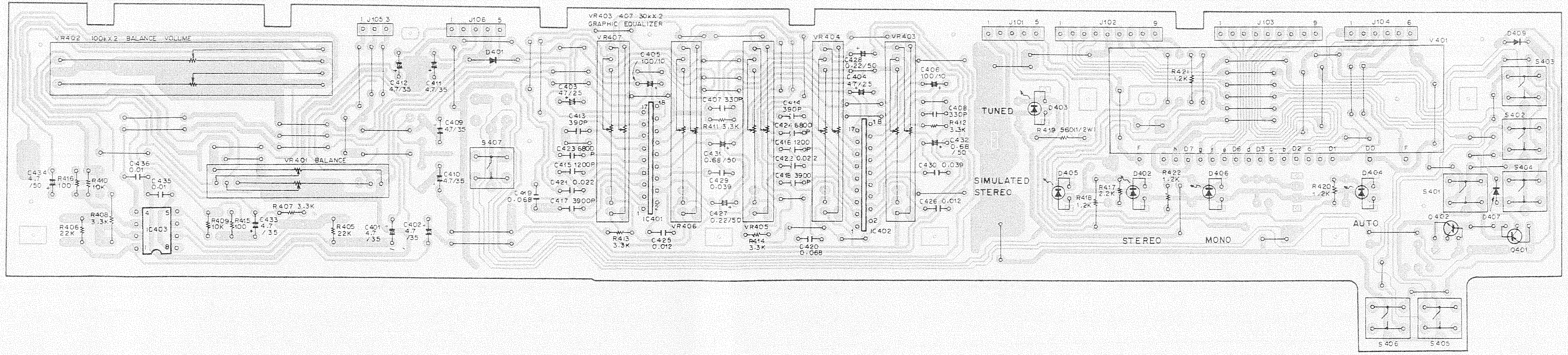


Q401,
Q704, Q706 - Q709,
Q714



Q402, Q701, Q702, Q705,
Q710, Q713, Q717

CONTROL ASSEMBLY (GWY-379)

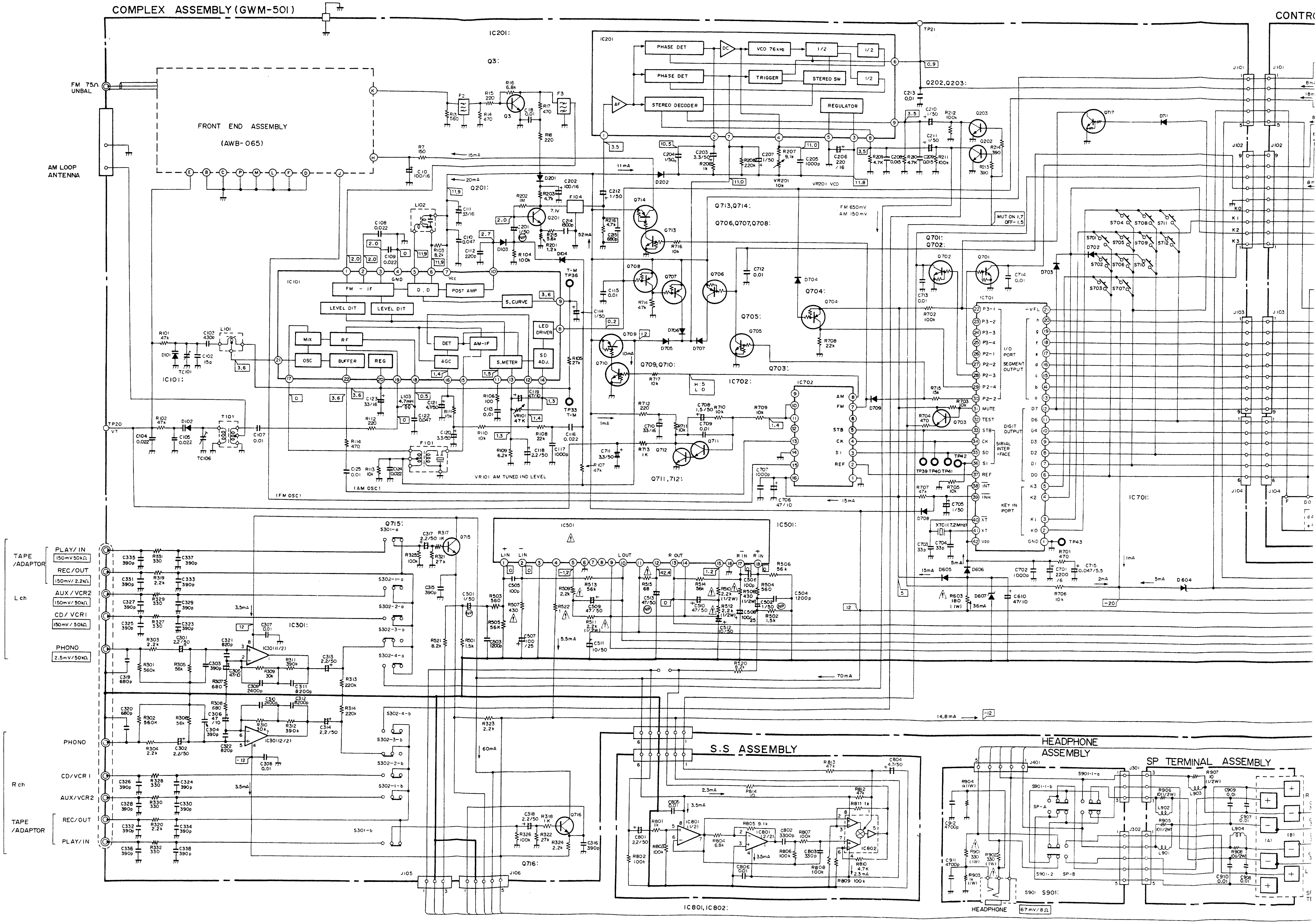

VR402 100K×2 BALANCE VOLUME
J105
J106
D401
VR403 - 407 30K×2 GRAPHIC EQUALIZER
VR407
VR406
VR405
VR404
VR403
J101
J102
J103
J104
V401
C412 47/35
C411 47/35
C409 47/35
C410 47/35
S407
VR401 BALANCE
C403 47/25
C413 390P
C423 6800P
C415 1200P
C421 0.022
C417 3900P
C405 100/10
C407 330P
R411 3.3K
C431 0.68/50
C429 0.039
C427 0.22/50
C414 390P
C424 6800P
C416 1200
C422 0.0212
C418 3900P
C420 0.068
C425 0.22/50
C404 47/25
C406 100/10
C408 330P
R412 3.3K
C432 0.68/50
C430 0.039
C426 0.012
C428 0.012
R413 3.3K
R414 3.3K
IC401
IC402
IC403
C434 4.7/50
R416 100
R410 10K
C436 0.01
C435 0.01
R408 3.3K
R406 22K
R409 10K
R415 100
C433 4.7/35
R407 3.3K
R405 22K
C401 4.7/35
C402 4.7/35
C419 0.068
TUNED
D403
R419 560 1/2W
R421 12K
SIMULATED STEREO
D405
D402
R418 1.2K
R417 2.2K
R422 1.2K
D406
R420 1.2K
D404
STEREO
MONO
AUTO
S401
S402
S403
S404
D409
D407
Q402
Q401
S406
S405

IC401, IC402 : BA3812L
IC403 : M5218PF
Q401 : DTA124ES(RN2203)
Q402 : DTC124ES(RN1203)
D407,
D409 } ISS131
D402 : AEL-460
D403 : AEL-463
D404 - D406 : AEL-461
D401 IIE2

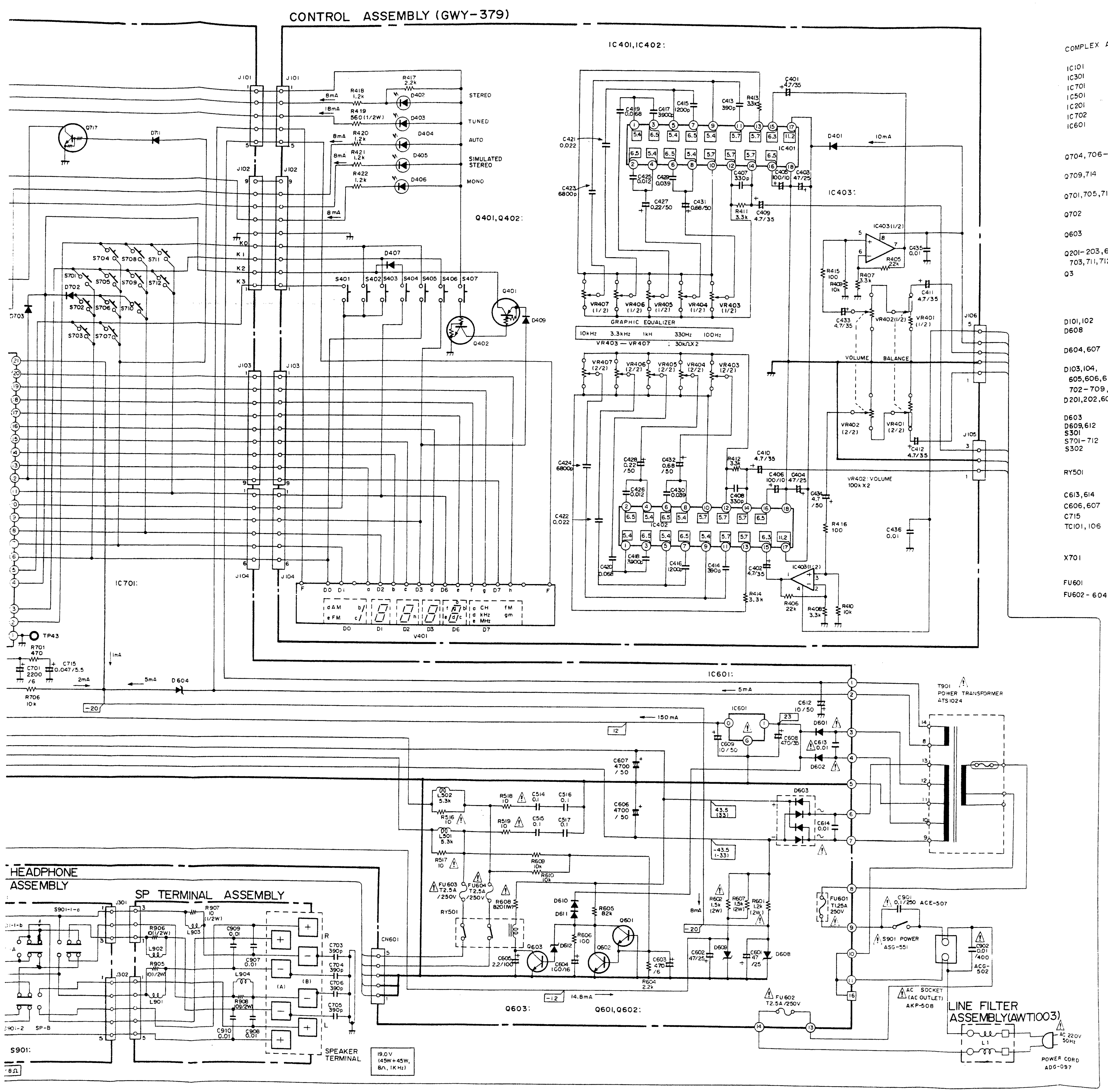
A
B
C
D

6. SCHEMATIC DIAGRAM

- **For SX-1500(BK)/HEZ type**



1
2
3
4
5
6
7
A
B
C
D
COMPLEX ASSEMBLY (GWM-501)
CONTRO
FM 75Ω UNBAL
AM LOOP ANTENNA
FRONT END ASSEMBLY
(AWB-065)
IC201:
Q3:
Q201:
IC101
FM - IF
Q.D
POST AMP
S.CURVE
LEVEL DIT
MIX
RF
OSC
BUFFER
REG
DET
AM-IF
AGC
S.METER
LED DRIVER
SD ADJ.
IC101:
(FM OSC)
(AM OSC)
VR101 AM TUNED IND LEVEL
T-M TP36
TP33 T-M
TP20 VT
TP21
PHASE DET
DC
VCO 76kHz
1/2
TRIGGER
STEREO SW
STEREO DECODER
REGULATOR
AF
Q202,Q203:
VR201 10k
VR201 VCO
MUT ON 1.7 OFF -1.5
FM 650mV AM 150mV
Q713,Q714:
Q706,Q707,Q708:
Q701:
Q702:
Q704:
Q705:
Q709,Q710:
Q703:
Q711,712:
IC702:
IC702
AM
FM
STB
CK
SI
REF
IC701
P3-1
P3-2
P3-3
P3-4
P2-1
P2-2
P2-3
P2-4
MUTE
TEST
I/O PORT SEGMENT OUTPUT
DIGIT OUTPUT
SIRIAL INTER-FACE
KEY IN PORT
-VFL
INT
INH
XT
VDD
GND
X701 (7.2MHz)
TP39 TP40 TP41 TP42
TP43
IC701:
J101
J102
J103
J104
K0
K1
K2
K3
TAPE /ADAPTOR
PLAY/IN
150mV/50kΩ
REC/OUT
150mV/2.2kΩ
AUX/VCR2
150mV/50kΩ
CD/VCR1
150mV/50kΩ
PHONO
2.5mV/50kΩ
L ch
R ch
PHONO
CD/VCR1
AUX/VCR2
REC/OUT
PLAY/IN
Q715:
Q716:
IC301:
IC301(1/2)
IC301(2/2)
IC501:
IC501
LIN
LOUT
R OUT
R IN
J105
J106
S.S ASSEMBLY
IC801(1/2)
IC801(2/2)
IC802
IC801,IC802:
HEADPHONE ASSEMBLY
J401
SP TERMINAL ASSEMBLY
J301
J302
S901
HEADPHONE
67mV/8Ω
SP-A
SP-B
(A)
(B)
70mA
14.8mA
60mA


CONTROL ASSEMBLY (GWY-379)
IC401,IC402:
GRAPHIC EQUALIZER
10kHz 3.3kHz 1kH 330Hz 100Hz
VR403 — VR407 : 30kΩ X 2
IC403:
Q401,Q402:
VOLUME
BALANCE
VR402: VOLUME 100k X 2
IC701:
IC601:
T901 POWER TRANSFORMER ATS1024
HEADPHONE ASSEMBLY
SP TERMINAL ASSEMBLY
SPEAKER TERMINAL
Q603:
Q601,Q602:
LINE FILTER ASSEMBLY(AWT1003)
AC SOCKET (AC OUTLET) AKP-508
POWER CORD ADG-097
S901 POWER ASG-551
19.0V (45W+45W, 8Ω, 1KHz)
STEREO
TUNED
AUTO
SIMULATED STEREO
MONO
V401

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

COMPLEX ASSEMBLY

IC101	LA1265S
IC301	NJM4558DXC
IC701	PD2017
IC501	STK4171-2S
IC201	TA7343AP
IC702	TC9172P
IC601	µPC78M12H
Q704,706-708	DTA124ES (RN2203)
Q709,714	DTA143ES (RN2201)
Q701,705,710,713	DTC124ES (RN1203)
Q702	DTC143ES (RN1201)
Q603	2SC1845
Q201-203,601,602, 703,711,712,715,716	2SC2458ES (2SC2603)
Q3	2SC2668
D101,102	SVC321C2
D608	RD20EB(HZ20EB)
D604,607	RD5.6EB (HZ5.6EB)
D103,104, 605,606,610,611, 702-709,711	1SS131
D201,202,601,602	11E2 (S5566)
D603	4D4B44(RBV402)
D609,612	RD12EB(HZ12EB)
S301	ASG-424
S701-712	ASG-712
S302	SUJ5L2B2B2B2L
RY501	ASR-111
C613,614	ACG-019
C606,607	ACH-252
C715	ACH-902
TC101,106	ACM-026
X701	ASS-025
FU601	AEK-018
FU602-604	AEK-403

CONTROL ASSEMBLY

IC401,402	BA3812L
IC403	M5218PF
Q401	DTA124ES (RN2203)
Q402	DTC124ES (RN1203)
D402	AEL-460
D404-406	AEL-461
D403	AEL-463
D407,409	1SS131
D401	11E2
VR403-407	ACX-152
VR401	ACX-153
VR402	ACX-154
S401-407	ASG-711
V401	AAV-039

S.S ASSEMBLY

IC801	M5218PF
IC802	M5201P

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (µF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   V : Signal voltage at 45W + 45 W, 8Ω output (1 kHz)
   ▭ : DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA: DC current at no input signal
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitois and resistors have parts unmbers.
   The underlined indicates the switch position.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

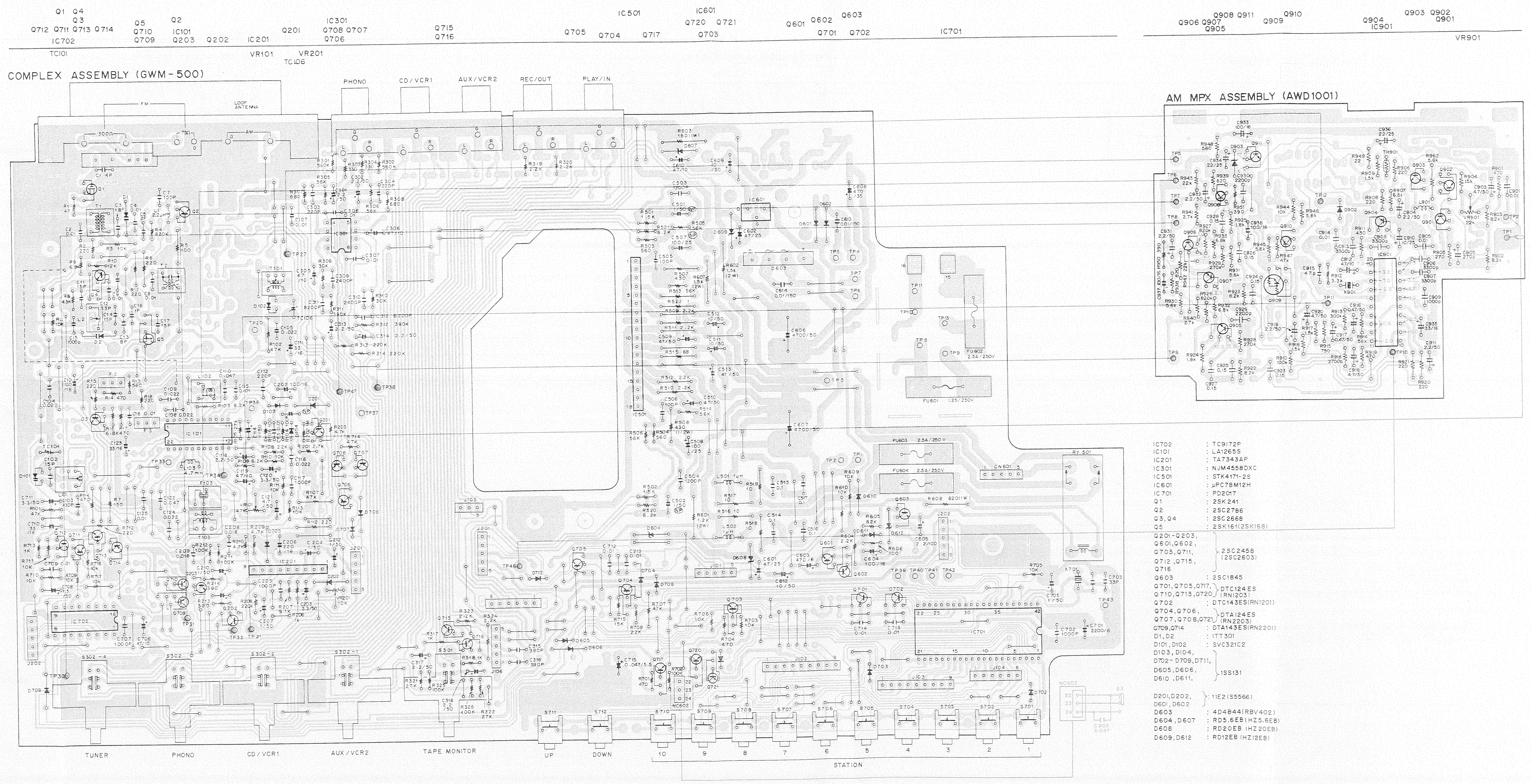
THE UNDERLINED INDICATES THE SWITCH POSITION

S901	POWER ON-OFF	S701	STATION1
S301	TAPE MONITER	S702	STATION2
S302-1	AUX/VCR2	S703	STATION3
S302-2	CD/VCR1	S704	STATION4
S302-3	PHONO	S705	STATION5
S302-4	TUNER	S706	STATION6
S401	AUTO/MONO	S707	STATION7
S402	FM	S708	STATION8
S403	AM	S709	STATION9
S404	AUTO/MANUAL	S710	STATION10
S405	MEMORY	S711	UP
S406	SELECT	S712	DOWN
S407	SIMULATED STEREO		

S901: SPEAKERS
S901-a SP-A ON-OFF
S901-b SP-B ON-OFF

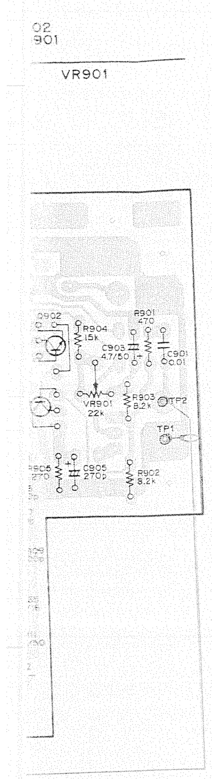
7. P.C. BOARDS CONNECTION DIAGRAM

- For SX-1500A(BK)/YP type


Q1 Q4
Q3
Q712 Q711 Q713 Q714
IC702
TC101
Q5
Q710
Q709
Q2
IC101
Q203 Q202
IC201
VR101
Q201
VR201
TC106
IC301
Q708 Q707
Q706
Q715
Q716
Q705
Q704
IC501
Q717
IC601
Q720 Q721
Q703
Q601
Q602
Q701
Q603
Q702
IC701
Q906 Q907
Q908 Q911
Q905
Q909
Q910
Q904
IC901
Q903 Q902
Q901
VR901
COMPLEX ASSEMBLY (GWM-500)
FM
LOOP ANTENNA
AM
300Ω
75Ω
PHONO
CD/VCR1
AUX/VCR2
REC/OUT
PLAY/IN
AM MPX ASSEMBLY (AWD1001)
FU601 1.25/250V
FU602 2.5A/250V
FU603 2.5A/250V
FU604 2.5A/250V
RY501
CN601
TUNER
PHONO
CD/VCR1
AUX/VCR2
TAPE MONITOR
UP
DOWN
10
9
8
7
6
5
4
3
2
1
STATION

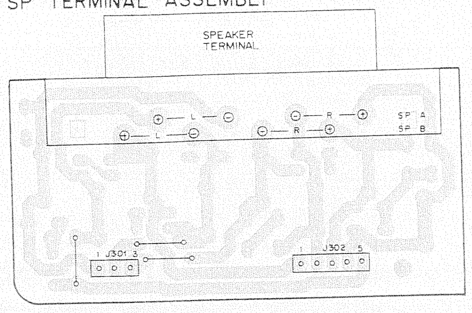
IC901	MC1302P
Q901	2SC2662
Q902,903, 905-908,911	2SC1740S
Q904,910	2SA933S
Q909	2SC3400
D902	1SS131
D903	RD9.1EB

IC702 : TC9172P
IC101 : LA1265S
IC201 : TA7343AP
IC301 : NJM4558DXC
IC501 : STK4171-2S
IC601 : μPC78M12H
IC701 : PD2017
Q1 : 2SK241
Q2 : 2SC2786
Q3,Q4 : 2SC2668
Q5 : 2SK161(2SK168)
Q201-Q203, Q601,Q602, Q703,Q711, Q712,Q715, Q716 } 2SC2458 (2SC2603)
Q603 : 2SC1845
Q701,Q705,Q717, Q710,Q713,Q720 } DTC124ES (RN1203)
Q702 : DTC143ES(RN1201)
Q704,Q706, Q707,Q708,Q721 } DTA124ES (RN2203)
Q709,Q714 : DTA143ES(RN2201)
D1,D2 : 1TT301
D101,D102 : SVC321C2
D103,D104, D702-D709,D711, D605,D606, D610,D611, } 1SS131
D201,D202, D601,D602 } : 11E2(S5566)
D603 : 4D4B44(RBV402)
D604,D607 : RD5.6EB(HZ5.6EB)
D608 : RD20EB (HZ20EB)
D609,D612 : RD12EB (HZ12EB)

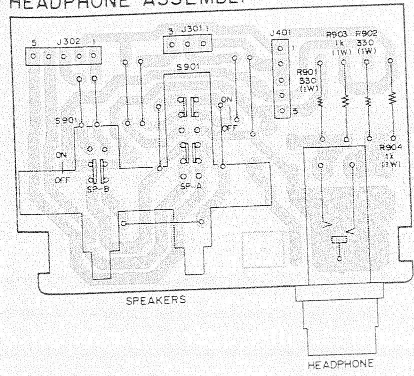

VR901
D902
R901
470
R904
15k
C903
47/50
C901
0.01
VR901
22k
R903
8.2k
TP2
TP1
C905
R902
8.2k

IC901	MC1302P
Q901	2SC2662
Q902,903, 905-908,911	2SC1740S
Q904,910	2SA933S
Q909	2SC3400
D902	1SS131
D903	RD9.1EB

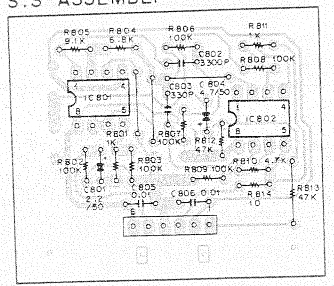
SP TERMINAL ASSEMBLY


SPEAKER
TERMINAL
L
R
SP A
SP B
J301
J302

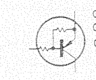
HEADPHONE ASSEMBLY


J302
J3011
J401
S901
R903 1k (1W)
R902 330 (1W)
R901 330 (1W)
R904 1k (1W)
ON
OFF
SP-B
SP-A
SPEAKERS
HEADPHONE

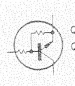
S.S ASSEMBLY


R805 9.1k
R804 6.8k
R806 100k
R811 1k
C802 3300P
R808 100K
IC801
IC802
C803 330P
C804 4.7/50
R801
R807 100K
R812 47K
R802 100K
R803 100K
R809 100K
R810 4.7K
C801
C805 0.01
C806 0.01
R814 10
R813 47K

IC 801 : M5218PF
IC 802 : M5201P

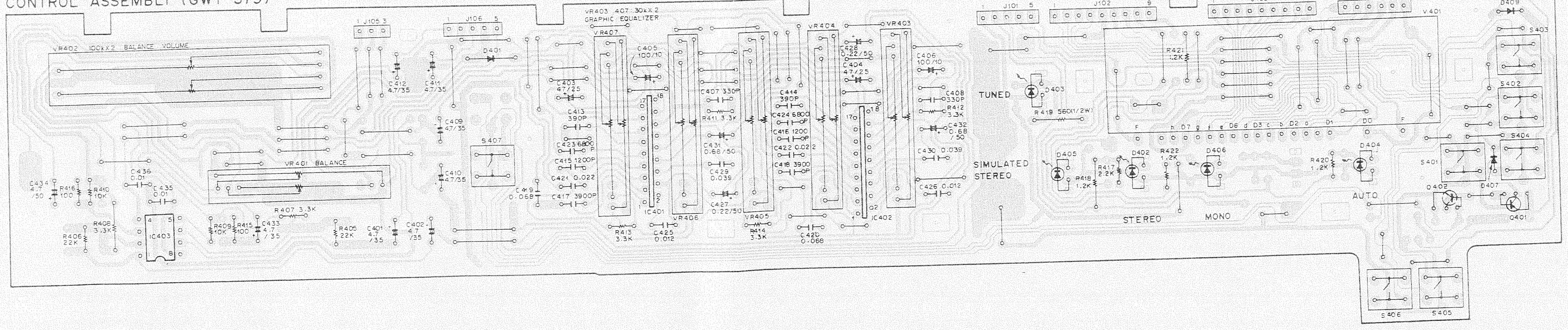


Q401,
Q704,Q706-Q709,
Q714,Q718,Q721



Q402,Q701,Q702,Q705,
Q710,Q713,Q717,Q720

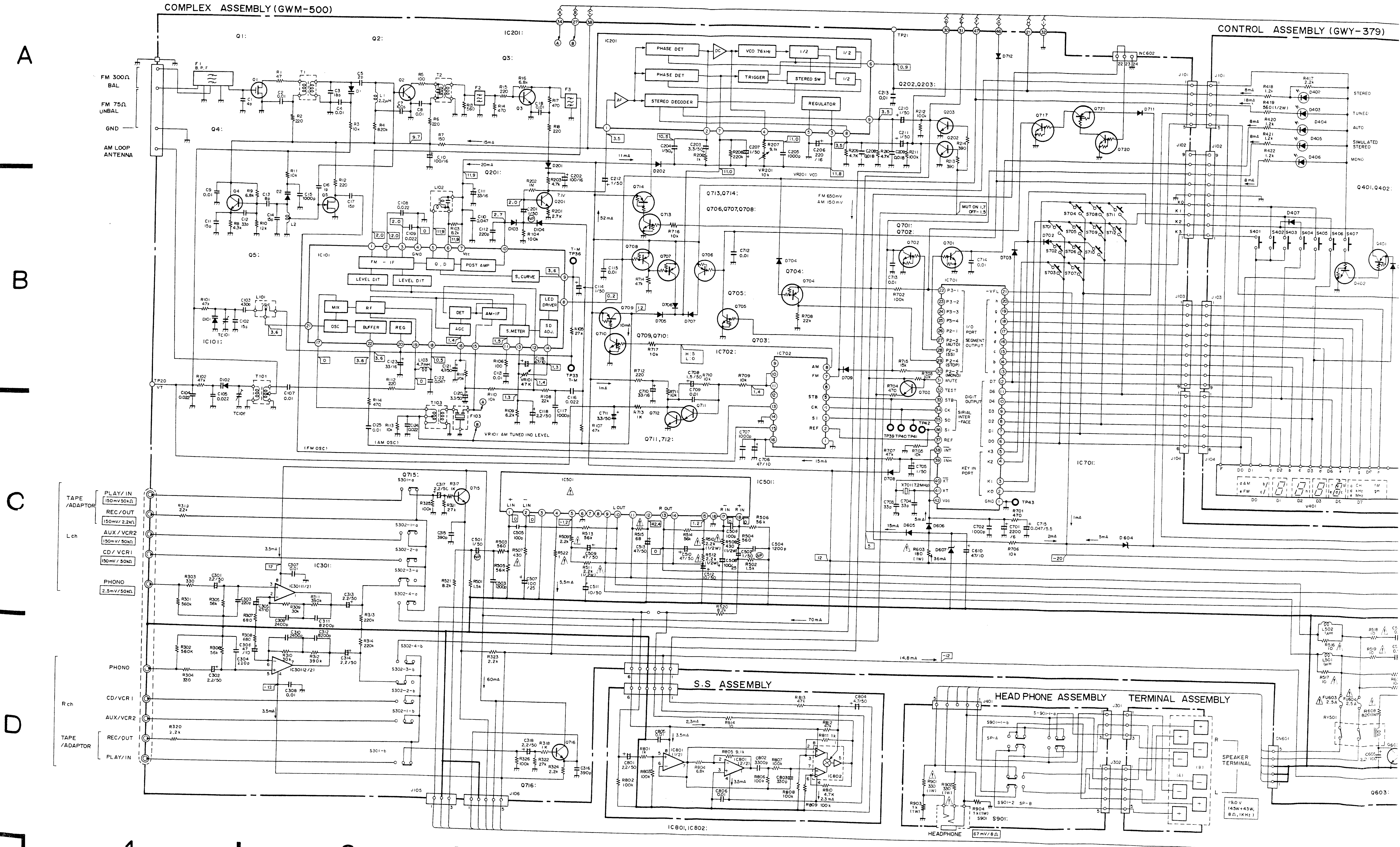
CONTROL ASSEMBLY (GWY-379)


VR402 100kx2 BALANCE VOLUME
J105
J106
D401
VR403-407 30kx2 GRAPHIC EQUALIZER
VR407
VR404
VR403
J101
J102
J103
J104
V401
D409
S403
S402
S404
S401
S407
VR401 BALANCE
R407 3.3K
IC403
IC401
IC402
VR406
VR405
TUNED
D403
R419 560(1/2W)
R421 1.2K
SIMULATED STEREO
D405
D402
D406
D404
STEREO
MONO
AUTO
Q402
D407
Q401
S406
S405

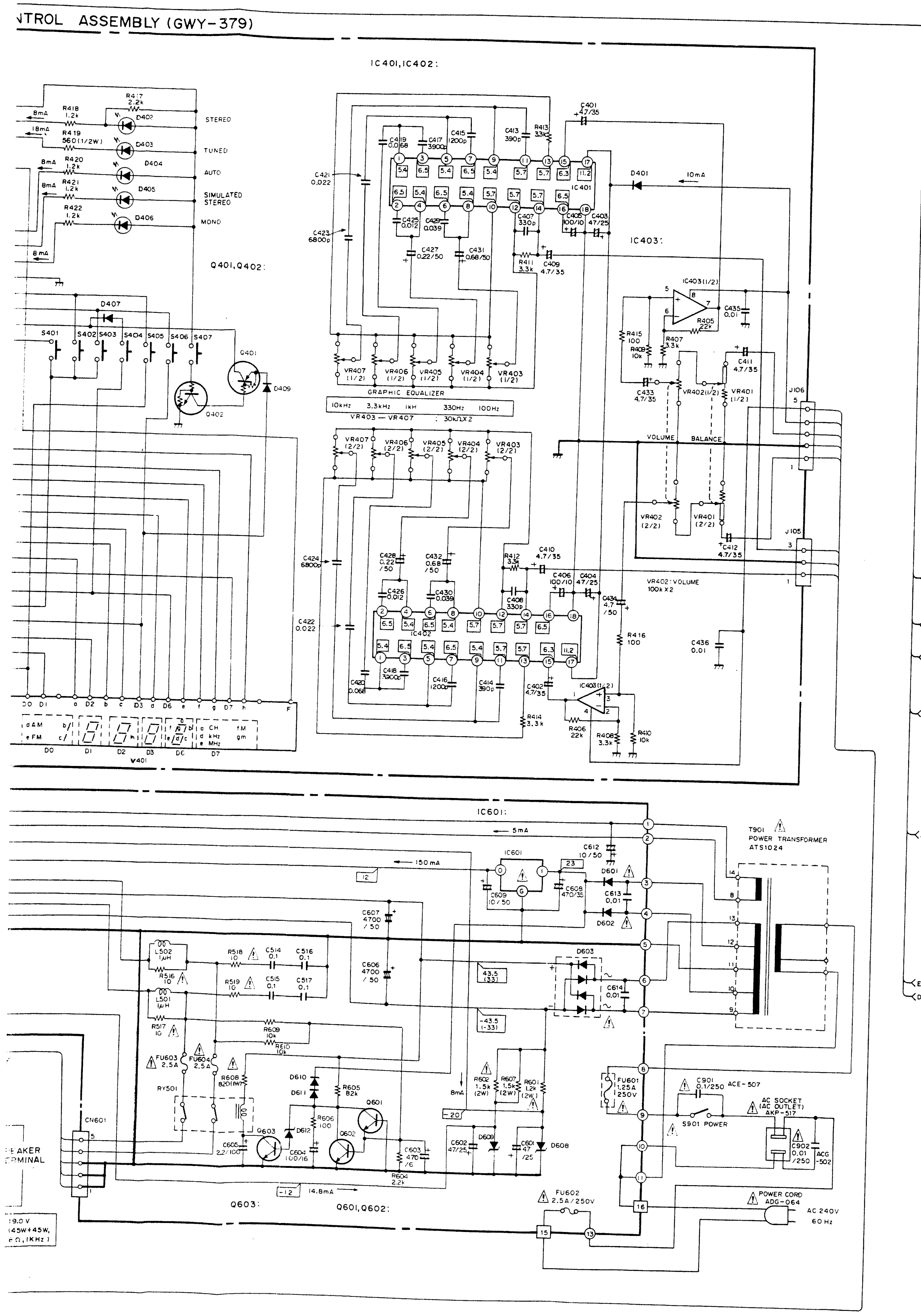
IC401, IC402	: BA3812L
IC403	: M5218PF
Q401	: DTA124ES(RN2203)
Q402	: DTC124ES(RN1203)
D407 D409	} 1SS131
D402	: AEL-460
D403	: AEL-463
D404 - D406	: AEL-461
D401	: 11E2

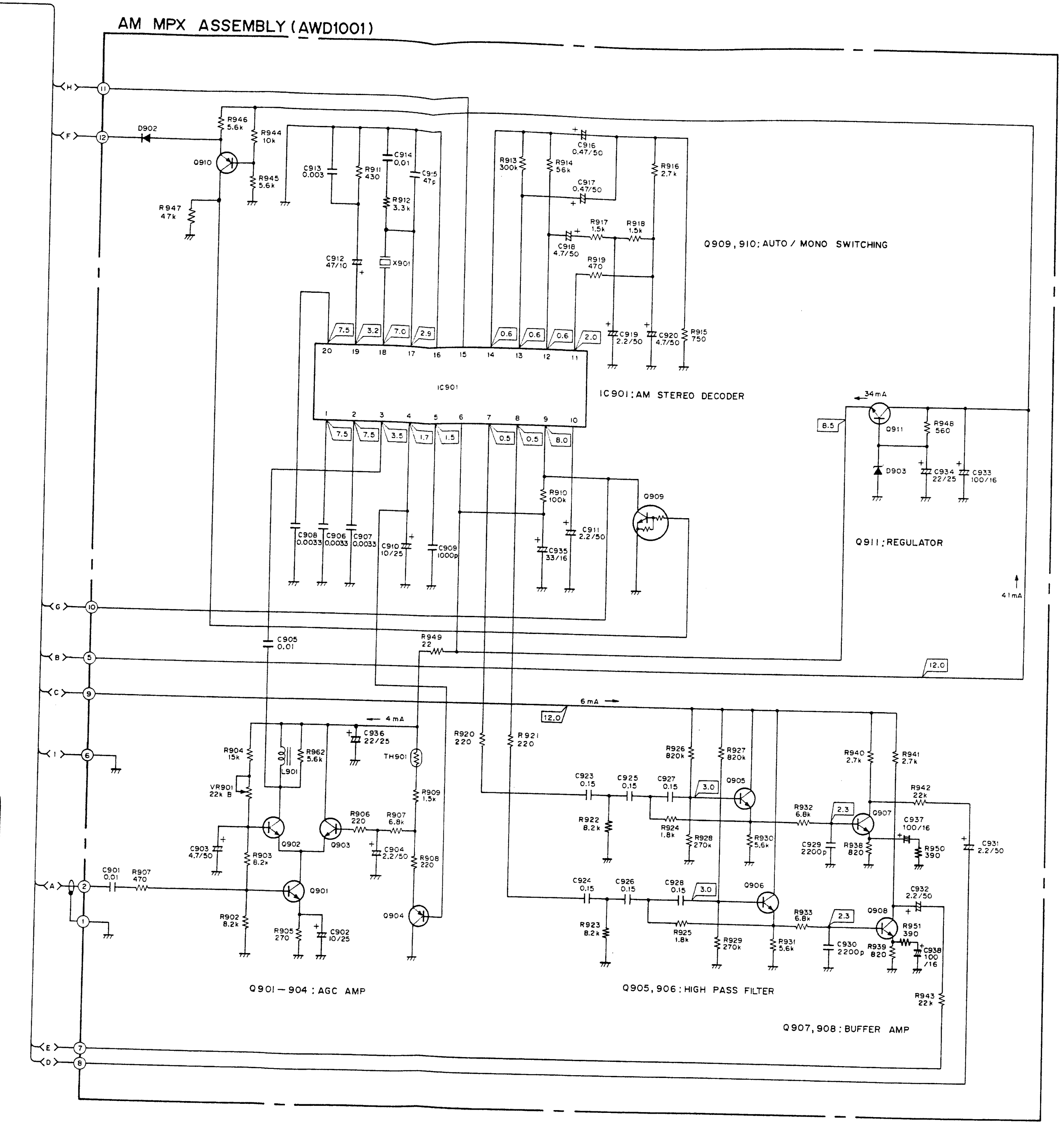
8. SCHEMATIC DIAGRAM

- **For SX-1500A(BK)/YP type**


1
2
3
4
5
6
A
B
C
D
COMPLEX ASSEMBLY (GWM-500)
CONTROL ASSEMBLY (GWY-379)
S.S ASSEMBLY
HEAD PHONE ASSEMBLY
TERMINAL ASSEMBLY
FM 300Ω BAL
FM 75Ω UNBAL
GND
AM LOOP ANTENNA
F1 B.P.F
Q1:
Q2:
Q3:
Q4:
Q5:
IC201:
IC201
PHASE DET
VCO 76kHz
1/2
TRIGGER
STEREO SW
STEREO DECODER
REGULATOR
AF
DC
IC101:
IC101
FM - IF
Q. D
POST AMP
LEVEL DET
S. CURVE
LED DRIVER
MIX
RF
DET
AM-IF
OSC
BUFFER
REG
AGC
S.METER
SD ADJ.
Q201:
Q202,Q203:
Q701:
Q702:
Q703:
Q704:
Q705:
Q706,Q707,Q708:
Q709,Q710:
Q711,712:
Q713,Q714:
IC701:
IC702:
IC501:
IC301:
Q715:
Q716:
IC801, IC802:
TAPE /ADAPTOR
PLAY/IN
REC/OUT
AUX/VCR2
CD/VCR1
PHONO
Lch
Rch
VR101 AM TUNED IND LEVEL
VR201 VCO
MUTON 1.7 OFF-1.5
FM 650mV AM 150mV
STEREO
TUNED
AUTO
SIMULATED STEREO
MONO
Q401,Q402:
V401
SPEAKER TERMINAL
HEADPHONE
S901:
19.0 V (45W+45W, 8Ω, 1kHz)
67mV/8Ω
J101
J102
J103
J104
J105
J106
CN601
Q603:

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.


NTROL ASSEMBLY (GWY-379)
IC401,IC402:
IC403:
Q401,Q402:
GRAPHIC EQUALIZER
VOLUME
BALANCE
VR402: VOLUME 100k X 2
V401
IC601:
T901 POWER TRANSFORMER ATS1024
Q603:
Q601,Q602:
RY501
FU603 2.5A
FU604 2.5A
FU601 1.25A/250V
FU602 2.5A/250V
S901 POWER
AC SOCKET (AC OUTLET) AKP-517
POWER CORD ADG-064
AC 240V 60 Hz
CN601
SPEAKER TERMINAL


AM MPX ASSEMBLY (AWD1001)
Q909, 910: AUTO / MONO SWITCHING
IC901: AM STEREO DECODER
Q911: REGULATOR
Q901 - 904: AGC AMP
Q905, 906: HIGH PASS FILTER
Q907, 908: BUFFER AMP

COMPLEX ASSEMBLY

IC101	LA1265S
IC301	NJM45558DXC
IC701	PD2017
IC501	STK4171-2S
IC201	TA7343AP
IC702	TC9172P
IC601	μPC78M12H
Q704, 706-708, 721	DTA124ES (RN2203)
Q709, 714	DTA143ES (RN2201)
Q701, 705, 710, 713, 717	DTC124ES (RN1203)
Q702	DTC143ES (RN1201)
Q603	2SC1845
Q201-203, 601, 602, 703, 711, 712, 715, 716	2SC2458 (2SC2603)
Q3, 4	2SC2668
Q2	2SC2786
Q5	2SK161(2SK168)
Q1	2SK241
D1, 2	ITT301
D101, 102	SVC321C2
D608	RD20EB(HZ20EB)
D201, 202, 601, 602	11E2 (S5566)
D604, 607	RD5.6EB (HZ5.6EB)
D103, 104, 605, 606, 610, 611, 702-709	1SS131
D603	4D4B44(RBV402)
D609, 612	RD12EB(HZ12EB)
S301	ASG-424
S701-712	ASG-712
S302	SUJ5L2B2B2B2L
RY501	ASR-111
C613, 614	ACG-190
C606, 607	ACH-252
C715	ACH-902
TC101, 106	ACM-026
X701	ASS-025
FU601	AEK-018
FU602	AEK-403

AM MPX ASSEMBLY

IC901	MC13020P	TH901	TH103-2
Q901	2SC2662	L901	ATH-116
Q902, 903, 905 -908, 911	2SC1740S	VR901	VRTB6VS223
Q904, 910	2SA933S	X901	ASS-045
Q909	2SC3400		
D902	1SS131		
D903	RD9.1EB		

CONTROL ASSEMBLY

IC401, 402	BA3812L
IC403	M5218PF
Q401	DTA124ES (RN2203)
Q402	DTC124ES (RN1203)
D402	AEL-460
D404-406	AEL-461
D403	AEL-463
D407, 409	1SS131
D401	11E2
VR403-407	ACX-152
VR401	ACX-153
VR402	ACX-154
S401-407	ASG-711
V401	AAV-039

S.S ASSEMBLY

IC801	M5218PF
IC802	M5201P

1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   V : Signal voltage at 45W + 45 W, 8Ω output (1 kHz)
   ▭ : DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA: DC current at no input signal
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:
   THE UNDERLINED INDICATES THE SWITCH POSITION

S901	POWER ON-OFF	S701	STATION1
S301	TAPE MONITER	S702	STATION2
S302-1	AUX / VCR 2	S703	STATION3
S302-2	CD / VCR 1	S704	STATION4
S302-3	PHONO	S705	STATION5
S302-4	TUNER	S706	STATION6
S401	AUTO/MONO	S707	STATION7
S402	FM	S708	STATION8
S403	AM	S709	STATION9
S404	AUTO/MANUAL	S710	STATION10
S405	MEMORY	S711	UP
S406	SELECT	S712	DOWN
S407	SIMULATED STEREO		

S901: SPEAKERS
S901-a SP-A ON-OFF
S901-b SP-B ON-OFF

9. CIRCUIT DESCRIPTIONS

FOR SX-1500A(BK)/YP TYPE

■SUMMARY OF AM STEREO CIRCUIT

In this tuner, an AM stereo decoder of Motorola system is adopted. The Motorola system is a CQUAM system (Compatible Quadrature Amplitude Modulation) which is the improved one of QUAM system (Quadrature Amplitude Modulation). In the QUAM system, it can receive signals with less distortion when the transmission side sends monaural signal of 1+L+R. However, when it receives monaural signals with stereo broadcast mode, as the stereo signal has components of $\sqrt{(1+L+R)^2+(L-R)^2}$; when L=R the signal waveform is as shown in Fig. 9-1, if this signal is received distortion is not generated. However, when the signal is L=R, its waveform becomes as shown in Fig. 9-2, and if it receives this signal with stereo broadcast mode distortion is generated. This is a defect of this system. The CQUAM system eliminates this defect.

The signal vector of the QUAM system becomes as shown in Fig. 9-3 and sum of the compound vector of 1+L+R and L−R becomes $\sqrt{(1+L+R)^2+(L-R)^2}$.

The signal of CQUAM system is that the signal of QUAM system to which cosϕ is being applied whose vector is as shown in Fig. 9-4. The compound vector sum of (1+L+R) cosϕ and (L−R) cosϕ is 1+L+R, as a result, no distortion is generated even if it receives monaural signals with stereo broadcast mode.

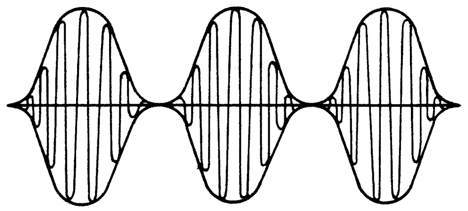


Fig. 9-1 In case of L+R

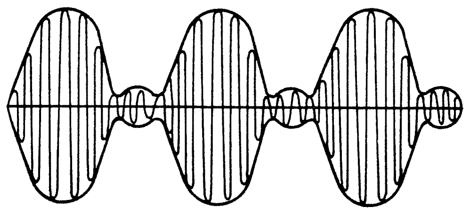
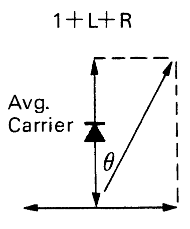
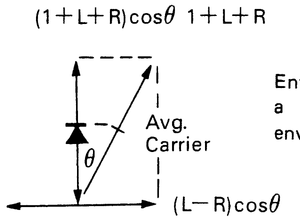


Fig. 9-2 In case of L+R



Envelope amplitude is not a correct sum signal for envelope detection.

Fig. 9-3 Basic quadrature AM (QUAM)



Envelope amplitude is not a correct sum signal for envelope detection.

Fig. 9-4 Motorola compatible quam

■AM MPX BLOCK DIAGRAM

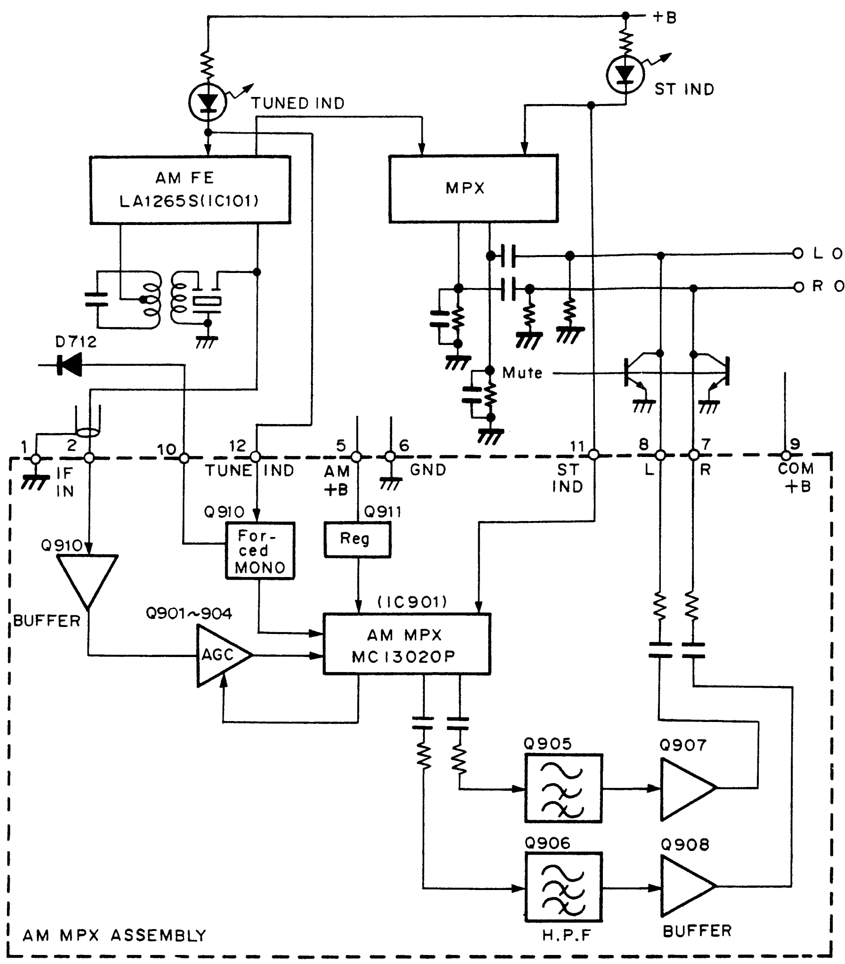


Fig. 9-5 AM stereo block diagram

The stereo signal which is converted into 450 kHz IF signal with F.E.section of LA1265S is output to the tuner terminal after it is passed through AGC amp. and being decoded by MC13020P. As being put into stereo mode, the tuned signal output of LA1265S is being applied to the forced monaural circuit.

■IC (MC13020P) DATA (IC901)

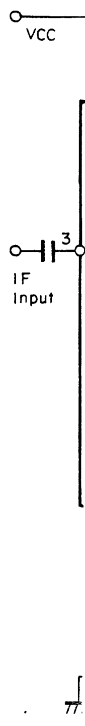
MC13020P is comprised of envelop detecting circuit, variable gain controlling circuit, error amplifier, I detecting circuit, Q detecting circuit, phase detecting circuit, VCO, 1/8 divider, QAGC, pilot decoder lock, level detecting circuit, OP amp. and switch matrix circuit.

The stereo signal modulated to 450 kHz carrier wave is envelope-detected by balancing modulation circuit. Simultaneously with the above, 1/cosϕ signal produced by the error amplifier is supplied to the variable gain control circuit where CQUAM signal is converted into QUAM signal. This signal goes into I detecting circuit and Q detecting circuit to demodulate 1+L+R and L−R signals, and simultaneously it goes into the phases detecting circuit.

The VCO (Voltage Controlled Oscillator) is oscillating with 3.6 MHz by using a ceramic oscillator and to divide the signal into 1/8 with ECL (Emitter Controlled Oscillator) circuit, so that it becomes 450 kHz, and it makes the signal phase to 0° and 90° and supplies them to the I detecting circuit and Q detecting circuit.

The QAGC functio
tude of pilot signal to
input to be fed to pin

The pilot signal of
circuit after being pa
which using OP amp.
through OP amp. 2, wh
lamp due to interferenc
passes only the normal
to prevent malfunctio



- **MC13020P pin**

Pin No.	
1	I DET filter co
2	Envelope DET
3	IF signal input
4	Level DET filte
5	Error AMP ter
6	Vcc
7	Audio LCH ou
8	Audio RCH ou
9	Forced monau
10	Lock DET filte

The QAGC functions to maintain a constant amplitude of pilot signal to be issued from pin 11, even if an input to be fed to pin 3 of IC varied.

The pilot signal of pin 11 is fed to the pilot decoding circuit after being passed ·throught a bandpass-filter which using OP amp. 1. Furthermore, this signal passes through OP amp. 2, which prevents malfunction of stereo lamp due to interference signal of other sources, so that it passes only the normal signal to the pilot decoding circuit to prevent malfunction of the stereo lamp.

The pilot decoding circuit descriminates the normal pilot signal from other signals, therefore it turns the switching circuit on only when the normal signal is input to light the stereo lamp.

The matrix circuit compounds signal components of L+R and L−R, and separates those of L and R, and it becomes stereo mode only during the stereo lamp is lit.

Pin 9 is a stereo/monaural changeover switch, and when its voltage is over 3.5V it is turned to stereo and less than 2.5V to monaural.

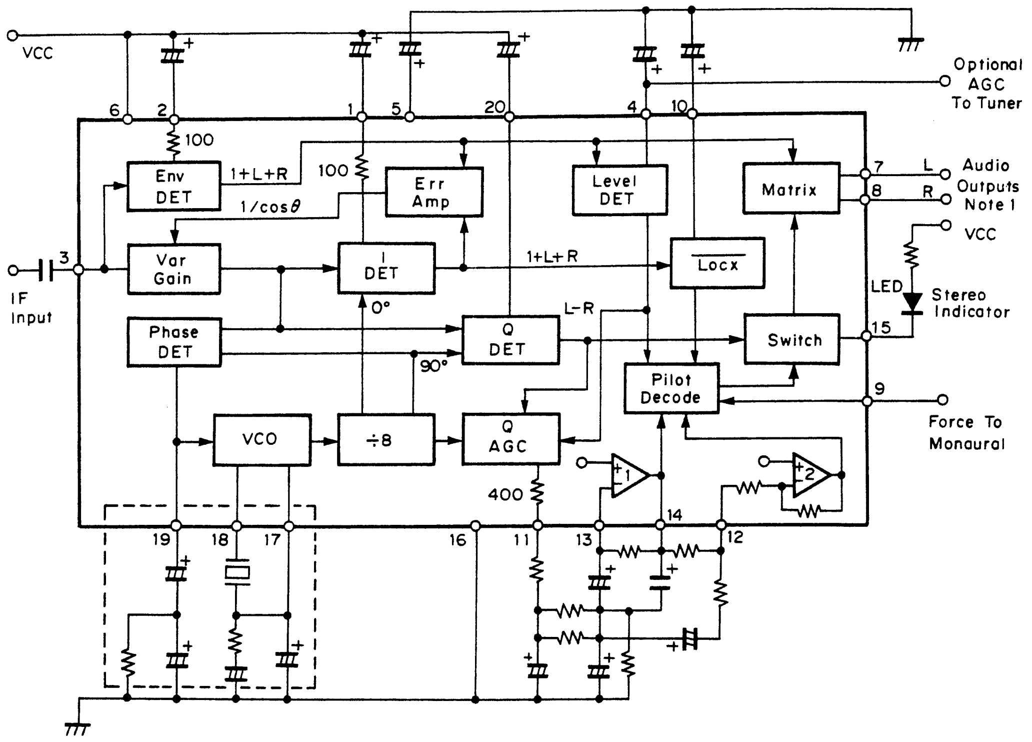

VCC
Optional AGC To Tuner
Env DET
1+L+R
1/cosθ
100
Err Amp
Level DET
Matrix
Audio Outputs Note 1
L
R
VCC
IF Input
Var Gain
I DET
1+L+R
Locx
Stereo Indicator
LED
0°
L-R
Phase DET
Q DET
Switch
90°
Pilot Decode
Force To Monaural
VCO
÷8
Q AGC
400
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Fig. 9-6 IC901 (M13020P) block diagram

- **MC13020P pin description**

Pin No.	Description	Pin No.	Description
1	I DET filter connection terminal	11	AGC Q output
2	Envelope DET filter connection terminal	12	Co-channel input
3	IF signal input	13	OP amp. pilot filter input
4	Level DET filter connection terminal	14	Pilot decode input
5	Error AMP terminal	15	STEREO lamp driver
6	Vcc	16	GND
7	Audio LCH output	17	OSC input
8	Audio RCH output	18	OSC feedback
9	Forced monaural	19	Phases DET output
10	Lock DET filter connection terminal	20	Q DET filter connection terminal

10. ADJUSTMENTS

FOR SX-1500A(BK)/YP TYPE

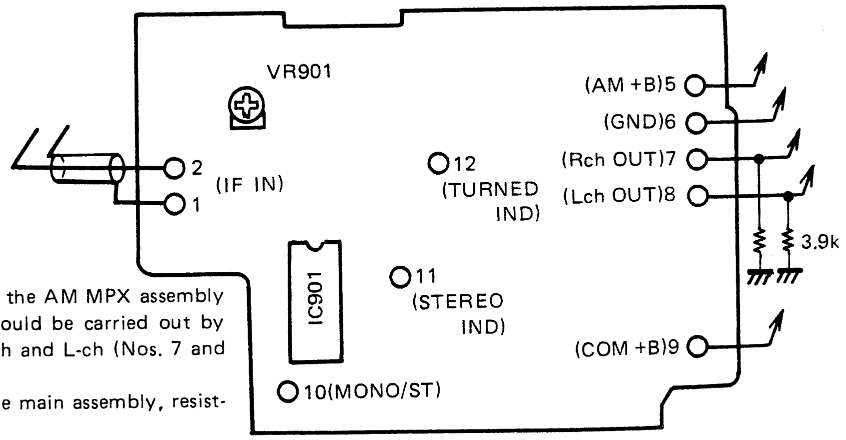
For servicing this type, please refer to the SX-1500(BK) adjustments service manual (ARP-1010: from page 21 to22) with the exception of this adjustment.

• AM (MW) Tuner Section Adjustment

Step No.	AM SG (400Hz, 30% modulation)		SX-1500A[BK] tuned frequency display	Adjustment	
	Frequency (kHz)	Level (dB)		Adjustment location	Specifications
1	No input signal		531kHz	L101	Set pin 3 of tuner assembly to 1.2V ($^{+0.3}_{-0.2}$ V).
2			1602kHz	TC101	Set pin 3 of tuner assembly to 10.0V (±0.5V).
3	Repeat steps 1 and 2 until both specification ratings are satisfied.				
4	603	40	603kHz	T101	Set the output from S meter TP of the tuner assembly to maximum level.
5	1395	40	1395kHz	TC106	
6	Repeat steps 4 and 5 until both specification ratings are satisfied.				
7	—	100	—	VR901*	Set the output level of AM MPX assembly to −18.0dB ±1dB.
8	1395	Variable	1395kHz	Check that the TUNING indicator comes on when the AM SG level is gradually increased.	

* VR901 is in AM MPX assembly (AWD-1001) (See Fig. 10-1)

AM MPX Assembly (AWD1001)


VR901
(AM +B)5
(GND)6
(Rch OUT)7
(Lch OUT)8
2
1
(IF IN)
12
(TURNED IND)
3.9k
IC901
11
(STEREO IND)
(COM +B)9
10(MONO/ST)

When performing an isolated adjustment of the AM MPX assembly AWD1001, the output level adjustment should be carried out by attaching resistances of 3.9kΩ to both R-ch and L-ch (Nos. 7 and 8) as loads.
When adjusting it as being connected to the main assembly, resistance of 3.9kΩ is unnecessary.

Fig. 10-1 Adjustment position